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Industrial FINISHING

Published Monthly in the Interest of Modern Production Finishing

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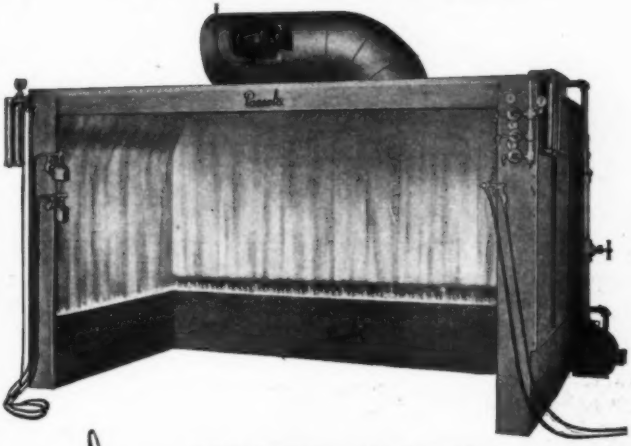

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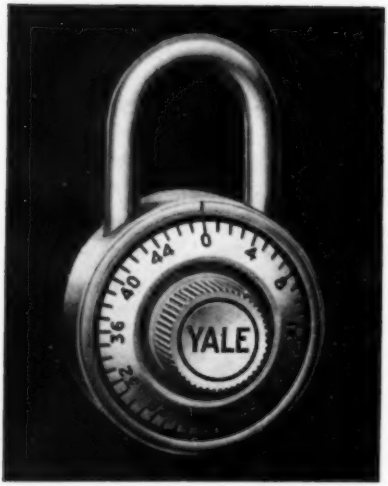
Manufacturers of Airbrushes—Aircompressor Units—Hose Couplings—Airfinishing Booths—Oiling Guns—Portable Airpainting Units—Sprayers—Stripers—Ventilating Units—Water, Oil and Dirt Eliminators

Again and Again

YALE & TOWNE PADLOCKS "CLICK" WITH ZAPON DURANITE FINISH



Yale & Towne are proud of the reputation of their padlocks for service and looks. Year after year they turn to Zapon for the finishes that protect and help promote these items.

Last year the famous "Silver Six" line of Yale & Towne padlocks, finished in Zapon Duranite S-277, was a great sales success. The recently launched No. 515 Yale & Towne padlock, with the same finish, is going over big.

S-277 aluminum liquid, speciallly developed for padlocks and hardware, is extremely durable. It also stands up well to salt spray, humidity and abrasion.

The thorough job we do for this important lock manufacturer is typical of Zapon service in taking care of specific situations.

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Stamford, Conn.

ZAPON

Western Units:
ZAPON-BREVOLITE DIVISION
ATLAS POWDER COMPANY
North Chicago, Ill.

INDUSTRIAL FINISHES

See Equipment Review Section Beginning Page 43

Industrial FINISHING

Reg. U. S. Pat. Office

Published Monthly in the Interest of Modern Production Finishing

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Tumble Finishing Knobs

We have noted in your December, 1940 issue, on page 6, reference to Tumble Finishing of furniture knobs. Can you advise us as to who makes these barrels for this work, or where we can get information regarding the details of them? Any advice you may have will be greatly appreciated.—U. L. H. Co. (ardware Castings).

Information supplied.—ED.

Roller Coating Venetian Blind Slats

Some time ago I read some articles in your magazine about roller coating wood pieces for Venetian blinds. I wish you would please send us a copy of this article, or articles, as I am unable to find the material in our files. —H. T. Co.

Copies of articles sent.—ED.

P.S.—Please keep all copies of your magazine. Our available back issues soon become exhausted because of the widespread demand for information contained in the publication.

Charted Information Wanted

Recently we started on a program to find a synthetic finish to use instead of a cadmium plating to resist salt water conditions. INDUSTRIAL FINISHING Magazine was brought to my attention and I found some very worthwhile articles therein and I would appreciate obtaining this magazine in our department in the future.

I am wondering whether there is any published information, aside from pure advertising literature, on the relative corrosion resistance of the various commercial synthetics What I have in mind is a chart listing all the various corrosives—acids, alkalies, alcohols, brines—and all other principle organic and inorganic liquids used quite widely, and telling which type of resins and commercially - available synthetic coatings are compatible with the specific corrosion condition. If you know whether any such information is available we would certainly appreciate receiving it. "Chemical & Metallurgical Engineering" ran such a chart back in 1932, but I don't know of anything along this line of a recent origin.

Any worthwhile information you can give us along this line will be greatly appreciated.—O. S. A. Co. (Metallurgical Research Dept.)

Will some reader please submit some information along this line?—ED.

History of Finishing Progress

We are endeavoring to secure information for a brief history pertaining to the highlights of the technological progress associated with Industrial Finishes from about 1890 to the present time. Each contribution to the progress of industrial finishing will be covered by a short statement covering its first use, when important changes were made, when it was ac-

The last word in new finishes!

VINDOLAC

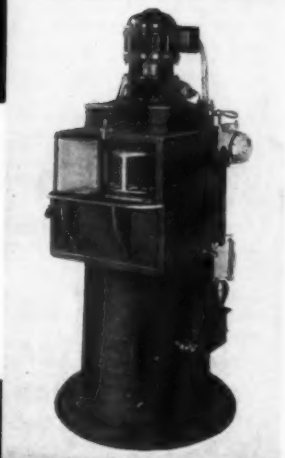
Heavier bodied—Tougher
Smoother flow
No shrinkage

LIQUOR PROOF
A full 27% solids—
Licensed, guaranteed

Order five gallons NOW, and if **VINDOLAC** is not all we claim for it, just tell us and full credit will be given.

V. J. DOLAN & CO., INC.
"Unquestionable Quality" Industrial Finishes
1830 NORTH LARAMIE AVENUE **CHICAGO, ILLINOIS**

Announcing
the new and larger
R-200 SPEEDIP ENAMELER



FOR LARGER PARTS

- Has basket capacity of 1206 cu. in., provides ample room for larger parts.
- Does perfect lacquering or enameling on metal, wood or plastic parts. Coats basket load in sixty seconds. Excellent for air dried or baked finishes.

SAVES TIME AND MATERIAL

- Outstanding features include automatic hydraulic tank lifting controls and explosion-proof motors and switches throughout with extraordinary simplicity and ease of operation.
- Surplus finishing material returns to tank within machine, none wasted and no messy handling of dripping basket or parts.
- Send us some of your products. We will gladly finish them for your inspection.

Write today for complete details.

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Flo-Bak Y-536 is particularly ideal for any product requiring a clear tough finishing coat.

- **Resists acid, alkali, alcohol**
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- **Excellent adhesion**

[Baking time is adjustable to most finishing schedules. 300° F. for 10 minutes — 275° F. for 20 minutes.]

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COATS FOUR SIDES IN ONE OPERATION

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Any width and ¼" to 1¼" thickness feeding up to 250 ft. per minute. Automatic feeding or foot pedal operation.

Recommended for SLATS, HEAD and TILT RAILS, RULERS, BILLETS, FABRICATED FURNITURE PARTS, etc.

Many machines are in production use by leading manufacturers. Satisfactory operation and service guaranteed.

Further details sent on request. Write

TORRES VENETIAN BLIND MACHINERY CO.

1945 PARK AVENUE NEW YORK, N. Y.

cepted for general practical use, and the fundamental advantages gained as improvements were made.

Contributions to finishing products would include varnishes, black japan enamels, lacquers, and synthetics; also their components—gums, resins, drying oils and solvents.

Contributions to the application of finishes would include brushing, spraying, centrifuge and other methods of finishing.

Contributions to drying coatings would start with room temperature drying and include low-temperature ovens, high-temperature ovens, infrared ray lamp drying, etc.

We assume that you may have some of this information in your reference files or library, or that you can tell us where we could obtain same. Your cooperation in assisting us in obtaining any of this material will be very much appreciated. — National Paint, Varnish and Lacquer Association.

Electric Sander

Will you kindly advise us by return mail the names of companies manufacturing a hand oscillating electric sander, similar to the type manufactured by the Sterling Products Co.?—B. I. Co. (Fixtures).

One is advertised on page 1 of September 1940 issue of this magazine. —ED.

Testing Apparatus

Kindly advise me what inexpensive equipment would be necessary, in your opinion, to check the viscosity, weight of solids, film thickness, etc. (in a general way without having to go into detailed technicalities) of sealer, gloss and flat lacquer, gloss and flat synthetic enamels and varnishes. Also advise of the very latest books on the above subject. Your booklet has set a standard for me and I can hardly wait between issues.—R. Furn. Corp.

We have published articles on the testing of finishing materials and are sending you copies of what tear sheets are available. We know of no suitable book on this subject.—ED.

Dipping Machines

We would like to secure the names of reliable firms in the U. S. (It is believed there are none in Canada, but if we are in error, please advise us) who make automatic dipping machinery for lacquering small objects. Specifically, what we are interested in is a

ALERT
Manufacturers
ARE
FLOCKING
to the use of our
COTTON, WOOL & RAYON
FLOCKS

Applicable to Wood, Glass, Paper, Fabric, Metal, etc.

By decorating countless varieties of items by spray gun application, they are beautifying their products, stimulating sales and increasing profits.

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You'd better investigate these possibilities NOW and reap the benefit.

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CLAREMONT, N. H.
The country's leading makers

FORM - A - ROC

We offer to all industries equipped for baking finishes this highly perfected, heat-converting, synthetic enamel.

FORM - A - ROC

We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

FORM - A - ROC

Baking schedule is of great flexibility, permitting from 5 - 50 minutes at 250 - 375° F.

FORM - A - ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

FORM - A - ROC

MADE BY

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue

CLEVELAND, O.

simple device having gears or some other arrangement for pulling up a rigid platform out of a tank of lacquer. The objects to be dipped are small in size (brush handles) that are rigidly attached to the platform and the tank will be large enough to accommodate from 50 to 100 or more at a time.

Any such information you could give us would be appreciated as we would like to communicate with these firms and secure our requirements as soon as possible.—C. P. Co. (Handmade Tooth Brushes) CANADA.

Striping Barrels

We have an inquiry in regard to a machine or some system for striping barrels. If you have anything in your files on this subject, would appreciate your sending us the manufacturers' names or referring us to them—A. V. Co. (Paint Makers).

Information supplied.—ED.

Clear Map Lacquer

We would appreciate it if you could put us in touch with the manufacturer of a transparent lacquer. This lacquer should be suitable for spraying on maps, but so it would not bleed through the paper causing the ink to run, and at the same time having a fairly high glossy surface.

We are having some difficulty at the present time with our transparent lacquer, as we find that it is necessary to spray a filler coat to prevent the lacquer from affecting the paper. Also, in time this lacquer discolors and spoils the appearance of the maps and charts which we spray.—E. H. Co. (Graphic Headquarters).

Infra-Red Baking

We are interested in Infra-Red Lamps for baking purposes. We are considering moving our present oven where it would not be handy to connect it to high-pressure steam and we're considering gas, but would like to be brought in contact with manufacturers who can furnish the infra-red equipment.—F. G. Co. (Boilers).

We are interested in a general description of the newly developed process for baking lacquer finishes by means of infra-red lamps, and are wondering if by chance tear sheets of articles published on this subject in previous issues may be available. The short note on infra-red drying, on

(Continued on page 107)

87% IS SEEING

In the Store

When Mrs. Public comes to buy—she's *boss!*

What she says—*counts.*

What she *sees*—counts—and will determine what she says!

87% is seeing. Mrs. Public sees the finish on the pieces she is interested in—perhaps more than anything else.

The finish determines the sale.

It is therefore, important for you to

choose the SUPERIOR FINISH!

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LACQUERS
SEALERS
STAINS
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Manufacturers • CHICAGO

« WELL SAID—

Maybe Your Product Needs a Made-to-Order Finish

* Unlike architectural finishing materials, such as house and maintenance paints, industrial finishing materials—lacquers, enamels, etc.—are usually not standard stock items made in quantity to sell to a large number of users. The reason for this is apparent. Each particular application for industrial finishing materials has its own peculiar requirements and therefore, to fit the job, a lacquer or enamel must be tailor made.

Take for example, two manufacturers of vending machines. Each, of course, desires a material that will stand up under the abuse to which such equipment is subjected in the field. From this point on, the requirements diverge widely. One machine is made entirely of steel. The other employs die-cast zinc in addition to steel. Hence, the first difference—*adhesion of the material to steel in one case, to steel and die-cast zinc in the other.*

Next, the all-steel cabinet manufacturer has a conveyor oven which can be made to reach 400°F. The other manufacturer has box ovens limited to temperatures of 250°F. Therefore, another difference.

Again, one manufacturer may desire the material for both dipping and spraying, while the other is equipped only for spray application.

Such differences in requirements could be continued almost without limit.

What is the object. . . . It is simply this: The finishing material manufacturer has an extremely difficult job, and to give you a satisfactory product he has to have your help. You must *give him all the facts*, all pertinent data about your problem. He is no magician. You can't simply say, I want a lacquer for such and such a job, and let it go at that. You must tell him what color you want, the gloss desired, the conditions the finish must meet in the field, the kind of equipment you have available and its operating characteristics, and similar information. It must be complete. Otherwise, he won't be able to help you.

So, give the finishing material manufacturer a break. *Give him the whole story about what you want.* If you do this you will find that nine times out of ten he will ring the bell to your advantage.—F. J. M.

---

* Guest Editorial

INDUSTRIAL FINISHING, December, 19

THE LILLY COMPANY

HIGH POINT, N. C.

F. J. M.

We have advocated this consistently for 10 years.

Our slogan "With the right finish, you'll finish right" appeared in the INDUSTRIAL FINISHING magazine ten years ago.

Recognizing at that time, the importance of formulating specific finishing materials for specific purposes and products, we laid the foundation for our present organization, in which has been instilled above everything else, the importance of individual needs in finishing.

Such an organization, backed up by adequate facilities, which have been expanded consistently to include three laboratory and research units*, is well-fitted to formulate and produce the "right" finish for you.

*Indianapolis, Ind.
*High Point, N. C.
*Gardner, Mass.

LILLY VARNISH COMPANY

INDIANAPOLIS, IND.

Great Britain and Europe: Apply Jensen & Nicholson Laboratories, Stratford, London, England

At the Furniture Show

LATEST STYLES, COLORS, FINISHES, WOODS, TRENDS

BY ROSALIE FLANK
Style Authority, American Furniture Mart

IN CHICAGO, at the recent winter national home furnishings show held at the American Furniture Mart, January 6 to 18, buyers found a new interest in 1941 home furnishings and saw many new trends which are believed destined for popularity during the year. Meanwhile designers and manufacturers watched the results of their latest creations in buyer reactions. Enthusiastically received were many of the new offerings, which indicated real progress in styling, construction and finishing. Market observers were able to pick out many highspots of the great, record-breaking market, at which some 11,000 carloads of new samples were shown.

Modern; 18th Century; Colonial; French Provincial

An oustanding definite trend of the market was the swing to modern in all price brackets, and the new interpretations of this trend. Interesting, on the other hand, was the rebound of 18th Century pieces back to "authenticity", with spe-

cial emphasis on "decorator's details" in finishes, trims and forms. Timely, was the newly awakened interest in furniture of American inspiration. Colonial, Federal and Early American styles enjoyed the impetus given by a patriotic awakening to the charm of the furniture created in America for our American forefathers, and adaptable to present day living. Reasonable, was the new interest in French Provincial, the simplified French style, long a favorite of the interior decorator, and now being noticed by the fashion-wise homemaker who is learning how to handle the kind of decorations which this type of furniture dictates.

Among the dozens of outstanding characteristics of the new home furnishings were interesting finishes and trims developed in each division of the extensive industry.

Oak Is Darling of Industry

With oak in "limed", "frosted", "oiled" and "natural" finishes, the newest darling of the industry, hundreds of new samples of quartered oak veneer and solid oak appeared in bedroom, dining room, living room and cedar chest lines. The new pieces looked like cleanly scrubbed, fair-haired children among a group of swarthy companions. Enhancing the light finished oak were polished brass pulls or colored plastic hardware trims. Birch and maple in natural finishes also made news with their lush pastel trims. Although modern was the style on which these woods were most often used, isolated 18th Century groups of "limed oaks" and some French groupings both in

---

Illustrations on opposite page: Photograph shows an interesting semi-circular buffet, a fine reproduction of a museum cabinet; it stresses real "authenticity."

The artist's sketch shows a 2-piece mahogany cocktail table with a leather top; may be used in two parts, center section being designed as a complete auxiliary table. When the center part is removed, a copper-lined drawer swings into position for the cocktail glasses. Copper tray is removable for convenience in serving.

Right: A portrait of the author.

Below: Perforated metal fashions this all-weather outdoor glider, which is made of automobile-body steel and finished in cream-colored enamel. The matching cocktail table has an ash tray (as in automobile interiors) built into the metal top.

oak and in birch indicated the many variations that would be possible.

Cordovan Mahogany Dramatic

At the other extreme and equally striking in contrast were groupings in Cordovan mahogany, a deep, rich, red brown color, highly finished and mirror-like in effect. Transparent lucite pulls dramatized the glowing richness of the dark wood and gave a sophisticated air to the modern groups upon which they were used. At the other extreme, natural finished mahogany was used to fashion both modernized 18th Century suites, as well as the frankly modern numbers, manufacturers continuing to stress the word "natural" instead of the word "bleached."

Pin-Striped Walnut Popular

Striking a middle course was quartered or pin-striped walnut, used on new modern groups in a brownish-grey heather-like finish referred to as "burly tobacco", "fawn grey" and other distinctive names. The perfectly straight vertical lines of the popular pin stripe emphasized the straight lines of the case piece upon which it was used, and appeared in numerous variations throughout the market.

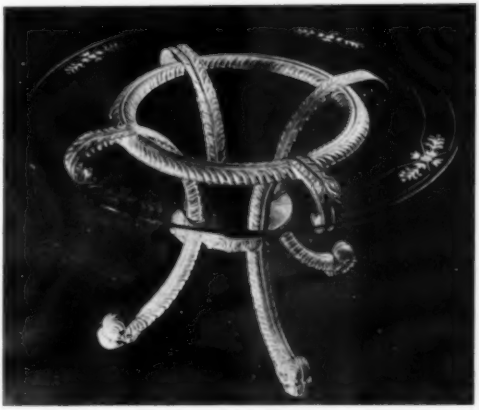
New Modern Features

Outstanding construction feature was the miters or bevels on the frames of the modern case pieces and novelties. The 1-in. and 2-in. mitered pieces were also used on drawer joinings to give a flush perfectly straight edge.

Most interesting development of the modern trend was the use of small, dresser height—32-in. cases, equipped with three and sometimes four drawers, used in combination with a single large mirror as a dresser and interchangeable as night stands or a series of chests. These chests, in the same size, were also shown in pairs and in triplicate for dining rooms—used in the same manner as a credenza.

With the newly awakened interest in authentic traditional pieces, great care was taken in reproducing the old waxed finish of the originals. Unusually fine results were obtained on all types of wood,

A patio set designed for dining out of doors. Wheels make this unit easily transportable and the bench gives maximum seating capacity. The arm chair, as well as the patio unit, collapses for easy storage. Photograph, courtesy of the American Furniture Mart.



An interesting table fashioned of natural colored mahogany and glass, shown recently at the American Furniture Mart. Heavily carved, the wood understructure makes a striking pattern through the etched, heavy plate circular glass top.

a French Provincial finish stressing brown-yellow tones while authentic 18th Century colors emphasized a deep glowing luster. Leather, too, used on the pieces was antiqued, the illusion of age being remarkably well obtained.

Lacquer Colors for Decoration

Lacquered finishes assumed new importance with their widespread use on novelty tables, case pieces and living room chairs. A new angle was disclosed by the use of colored lacquer on the frames of high style chairs, the color being especially blended to match the accent fabric. A biege fabric chair with a magenta accent color was lacquered in magenta.

New dinette and kitchen suites used colored lacquer drawer and china interiors. The color was repeated in stripings on the cabinets, in the colored hardware and on the chair upholstery. Chartreuse, mellon, cherry red, yellow and many pastel tones were used on light finished birch, limed oak, maple and attractive black lacquered groups.

Newest finish on maple was a "wind blown" color which had a deep weathered effect and gave a South American feeling to the dinette group on which it was used.

Unusual new kitchen groups used colorful stencils on the doors of coffee-colored oak ensembles.

Plastics Used in Many Forms

Plastic veneers (trade name "Plastyle") were shown in interesting linen and tweed-like grey and beige tones, and were used in combination with oak on small tables and bookcases; also with enamel on bedroom and dining room groups, and on new juvenile ensembles. Impervious to most liquids and highly resistant to heat, the new plastic will neither mar, scratch nor chip. It is practically indestructible.

In addition to being used for hardware, both in clear and tinted form, crystal clear plastic, such as Lucite and Plexiglas, was used to fashion entire small tables and was used as a trim on occasional furniture forming galleries, corner

South American influence is noted in this interesting two-tier sun umbrella shown at the recent midwinter national home furnishings show—American Furniture Mart.

brackets and ornaments. Transparent plastic arms on side chairs and plastic ornaments on upholstered furniture were used. Plexiglas combined with brass fashioned many interesting new lamps. A number of "Plastyle" lamps were shown.

Plastic finished agitators on washing machines, as well as all-plastic moulded agitators were new talking points — the plastic eliminating corrosion, the new bugaboo of this phase of the appliance industry. Plastic enameled casings on wringers and all-plastic control handles in red and in blue were other important new features.

Transparent plastic doors over ice-cube containers in refrigerators showed still other variations of the uses of plastics.

Lacquered bases on floor and table lamps struck a new note; the Regency influence was noted in the use of Regency colors and considerable black and gold. Lime green, amthyst blue, pink, wine and other "high" colors were used both on the base and matching fabric shade. American-made potteries and glass were used as bases for new lamps, and unglazed bisque fashioned many interesting new numbers.

All-Weather Finishes on Outdoor Furniture

Outdoor furniture featured bonbon pastels and stressed all-weather enameled finishes of the type used on automobile bodies. All metal gliders, chairs and tables, in cream, beige, strawberry pink, azure blue and other pastels were in vivid contrast to the gayly colored umbrellas which featured Guatamala prints and highly colored combinations of South American inspiration.

Some of the new outdoor furniture was finished in a "Hammerloid" finish, obtained by a base coat of aluminum mottled by solvent from a spray gun. Several of the new stoves had ovens and utility drawers lined with the "Hammerloid" finish as well.

Natural-finished pine on outdoor barbecue sets was a new note, and many new enameled folding-chair sets, all on wheels for easily transporting from lawn to porch, were shown both in pastel and vivid contrasting colors.

In addition to the "Hammerloid", dove grey, "spattered" grey and white finishes were used on oven interiors to give a new daylight effect.

Enameled finishes over cast-iron and steel were used on new ranges, white and chrome hardware being the favorite trim.

Stenciled "cook charts" on oven lids and on drip pans gave a new talking point on ranges. The stencils were made in white and used against a black background.

A new mottled blue and green enamel, baked on by the infra-ray

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CUSTOM BUILT OVENS
(Continuous or Truck Type)

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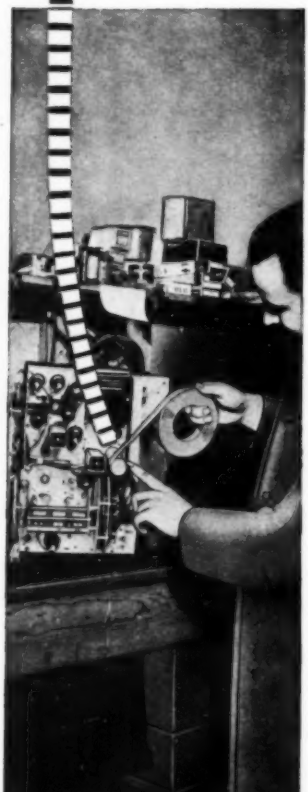


The great strides made in this leading industry are due to the advancement of mechanical skill, knowledge and scientific development. Back of every gleaming radio set is perfection of production detail aided in no small measure by the use of efficient, time-saving, pressure sensitive industrial adhesive tapes.

The Industrial Tape Corporation standard line of dependable tapes is constantly used to protect parts, woodwork, polished surfaces, etc. Also to hold movable parts and for general protection in shipping. Special tapes also available for coil work.

Samples on request

If you have any special tape problem our laboratory offers full cooperation to help solve it, without obligation.

INDUSTRIAL TAPE CORPORATION

NEW BRUNSWICK, N. J.

method, was shown on a new vacuum cleaner. The blue grey tone gave a smart new appearance to the funnel-type machine.

Cream Veiling; Imitation Leather

Among the interesting new finishes demonstrated to manufacturers for use on new heater lines by one of the finishing companies represented at the Mart, was a brown background with a cream veiling. The veiling covered the defects still apparent after a first coat was applied.

An imitation leather finish, produced by a coat of stipple highlighted with burnt umber, was also of interest to card-table manufacturers for tops.

An attractive washing machine exhibited by Barton Corp. A removable red molded plastic bowl fits on the regular agitator and provides a separate washing compartment for small pieces. The outer surface of the red bowl has small fins to create a scrubbing action and provides additional agitation for clothes that rise in the tub.

Hammered Finishes

HAMMERED finishes have gained greatly in popularity during the past year, especially as a finish for automobile radios, automobile heaters, metal and molded home radio cases, air1conditioned units, circulating heaters, furnace jackets, bath-room scales and miscellaneous metal articles. Ease of application, improved luster, greater surface hardness, better heat resistance and more attractive color combinations are some of the improvements that have been made.

Lower cost per gallon, greater spreading rate, immediate development of pattern, freedom from sags and similar defects, a smooth non-dust-atching surface, and a wide range of attractive colors — these are some of the advantages claimed for hammered finishes, as compared to other types which depend upon the application of heat to develop the pattern.

Hammered finishes can be obtained that will air dry, in addition to the variety that is customarily baked from 30 to 60 minutes at 250°F. Special materials are also available that can be baked in a few minutes in an infra-red oven, or they can be baked for a considerable period of time at 400° or 450°F. to develop maximum heat resistance on circulating heaters and similar articles.—R. C.

Lilly Varnish Co. Opens New Unit at Gardner, Mass.

In addition to the factory and laboratory facilities at the home plant in Indianapolis, Ind., (and in High Point, N. C.) the Lilly Varnish Co. has established a third such unit at Gardner, Mass. This new addition will be used to develop and produce both wood and metal finishes. Mr. Tom Kelly, who has represented the company in the New England territory for a number of years, is in charge of this new plant at Gardner, Mass.

I was very much surprised and pleased to receive your letter inviting me to contribute an article to your magazine. Accordingly, I have prepared something about metal casket finishing . . . . .

When I first took this job I hardly knew one end of a spray gun from the other. I found a copy of your magazine which, luckily, had a short piece in it about metal casket finishing. I read it and have read every issue since. That was in 1935, I believe. It was naturally a great help to me in those days when I was learning.—

Albert Matlock

Finishing Metal Caskets

BY ALBERT MATLOCK
Foreman Finisher

FINISHERS visiting our shop have often said, "You fellows certainly have it easy; all this stuff is made just to put under the ground and that lets you get by with anything in the way of finishing."

This is far from true. The casket business is highly competitive, just like refrigerators or radios, and morticians are very critical about the merchandise they buy. At least one undertaker I know goes over each case with a magnifying glass in search of possible defects.

Also, add the fact that the casket is to be on display at the funeral home 365 days a year until it is sold (sometimes as long as two or three years) so naturally it is impossible to use any thing but the highest quality materials and the utmost care in finishing.

Novelty finishes come and go, just as in other industries, but the one that "goes on forever" is the buffed lacquer finish, as described in this article. It has a richness and depth that cannot be surpassed.

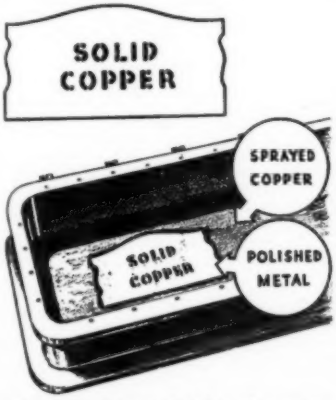
When the bare metal shells come to the finishing room they arrive liberally coated with dirt, soldering acid, corroded spots from the acid, rust and sweat prints. They are immediately scrubbed with steel wool dipped in a mixture of four parts solvent naphtha and one part ethyl acetate. Rust spots and corrosion are wet-sanded with No. 100 grit sandpaper. If there is much rust it is removed with "Metalprep." This cleaning is a job that must be done right or else all the following work will be for nothing. The cleaning deck is outside the finishing room proper because of the fire hazard and, needless to say, good ventilation and correct fire preventive measures must be strictly maintained.

Spray Equipment; Primer-Surfacer

Spray equipment in the shop consists of one 10-ft. booth, with two high-speed production guns one of which is hooked up with a gravity

bucket for clear lacquer only; and one 8-ft. booth with two large guns and a small shading gun. This small booth is used mostly for spraying handles for the cloth-covered caskets. The finishing room is on the top floor of the building, with windows on three sides. The booths face the south windows. Exhaust flues pass out through the ceiling which, incidentally, is insulated with aluminum foil, preventing dust from falling on the work.

After being thoroughly cleaned, the shell is rolled into the finishing



Before spraying the interior of a copper or bronze casket we polish an area in the bottom, coat it with clear lacquer and then lay the stencil plate (marked copper or bronze) in position. This makes it easy for the mortician to satisfy himself and his customers that the casket really is solid copper or bronze — without scraping off some of the interior metallic finish.

room and the joints and crevices are "blown out" with a duster gun. This is followed by wiping off with a lint-free cloth dampened with alcohol to remove any moisture or acid smears that may happen to remain on the metal. The alcohol dries rapidly and the shell is now ready to be primed.

I speak of "priming" when in reality this material is a combination primer and surfacer.* It was mixed especially for use on lead-coated steel caskets. It is light grey in color, nearly white, dries to sand in 20 minutes, and sticks as though it were baked on. *We always prime the ground-off surfaces on the corner joints first; then we go over the whole thing again. The primer is mixed thin, sprayed at 50-lbs. and sprayed "wet" so that very little sanding will be required.*

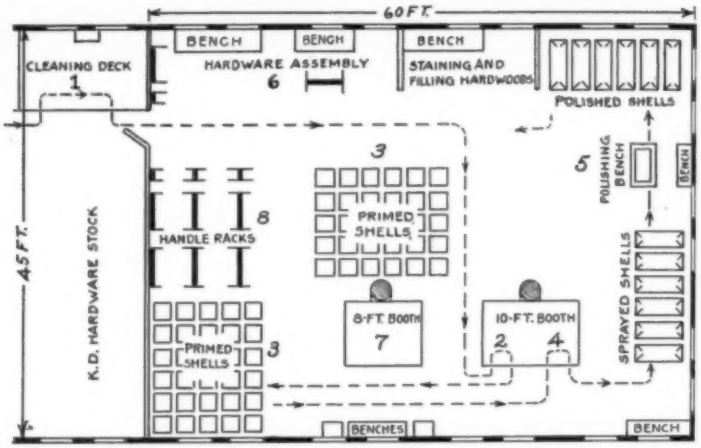
The inside and bottom of the shell are sprayed with odds and ends of the various colored bronzing lacquers that accumulate at the hardware booth and which would otherwise be wasted.

Inside Finish and Identification of Metal

Dealers usually look under the mattress of a solid copper or solid bronze casket to see if they are getting what they ordered. I prepare for this by leaving a space about 10x24-in., showing the metal of which the casket is made. First the metal is polished brightly over an area a little larger than necessary (10x24-in.), and coated with clear lacquer. Then I lay a heavy stencil plate on the polished section and spray the whole inside of the shell with copper, if the case is copper, or gold if the case is made of bronze (which is gold-colored when new). I have a stencil made for both metals and I shade around the plate and over the letters, as shown in the accompanying illustration.

After priming, the file marks and solder pits are filled with black PX knifing putty and, unless it is to go out at once, the shell is stood up on end until ordered out. Before

*Names of suppliers of materials used will be furnished on request.



Caskets are cleaned (1), prepared for priming (2), placed in stock (3) until ordered, sanded and finish coats sprayed (4), dried overnight and polished (5), hardware is assembled (6), sprayed (7), and placed in racks until needed (8).

The primer is sprayed in the large booth. We carry a working stock of primed shells consisting of about 60 to 80 of the six most common styles. After priming, the shell is stood up on end until needed. The metal crew makes up a number of only one style for several days, and during this time orders for others are filled from the primed stock.

Some shells, such as copper, bronze, and heavy-gauge Armco are made only when ordered. In such cases the casket is primed, moved to one side until dry, then finished and polished.

This is not what you might call a streamlined layout for a shop. We started with one small corner and just "growed." The shop was enlarged three times the first year. I would appreciate comments from readers on changes that could be made. A better arrangement would be easy if we only had straight metal finishing, but we also have to finish hardwood caskets, finish and assemble handles, and spray vaults to match cloth-covered caskets.

proceeding with the finish the primer is scuff-sanded with No. 320 paper and "blown off" again. The surface is now ready for the color coat which, on steel caskets, is usually silver.

We use an extremely fine silver lining powder* in a vehicle of water-white bronzing lacquer. Lacquer and thinner are mixed in equal parts, using just enough powder to cover well. The material is sprayed at a pressure of 40-lbs. For colors other than silver, such as gunmetal, Venetian bronze, etc., I prefer to use opalescent casket lacquer*, a material that is already mixed and requires only thinning. There is very little spotting and no waste, since it will keep indefinitely.

The color coat is followed by shading and blending; then the clear top coat of lacquer is sprayed on. This top coat* should be water-white and of good quality, since a cheap lacquer yellows quickly and sometimes cold-checks. I thin it 50/50, using a little butyl acetate to retard the drying and to give better flow. I spray it from a gravity bucket to 55-lbs. pressure. This

coat should dry overnight before polishing although, in emergencies, we have turned out a passable job with only two hours of drying time.

We have tried out several polishers and have found that the one which works best is a 7-in. rotary type with a sheepskin bonnet. The compound is mixed with water and brushed on only a portion of the casket so that it will not dry out. Then the buffer is started and applied back and forth until a mirror-like surface is attained. This operation requires much skill, as it is easy to cut through on a sharp edge or corner. A clean-up hand polish comes next to remove circular marks left by the buffer and also to rub out places inaccessible to the machine buffer. The casket is now ready for its hardware which, in the meantime, has been sprayed at the hardware booth.

Popular Color Combinations

The finish most popular at present is blended silver, that is, silver with gunmetal shading along the moldings to give an oxidized silver effect. Probably next in demand, in this locality, is light Venetian bronze with coppertone shading. In the past few years there were many caskets finished with 1-in. stripes of a contrasting color around the shell (this was done by taping) but recently the trend seems to be going back to the softer blended types.

Beige or taupe lacquer enamel makes a rich looking finish when blended with bronze and shaded on the moldings with a fine brass highlight. Some more pleasing arrangements are gold and orchid, silver and bronze, coppertone and gunmetal, and bronze and gold. Recently I sprayed a casket with the lower portion painted in deep bronze while the top was beige, in the manner of the late model cars.

Our small child's caskets are sprayed with white lacquer enamel shaded with pink or light blue, then coated with transparent pearl lacquer. This gives a soft irridescent luster, particularly suitable on this type of casket. Pearl can also be used to advantage over gunmetal and bronze; in appearance it closely resembles plating.

There is no limit to the number of blends and combinations that can be worked out. The casket finisher, like his brother in the furniture factory, must never allow himself to forget that *the finish sells the job.*

New Spray Painting Catalog

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., has just announced the publication of a new 92-page complete industrial catalog, covering all types of spray painting and finishing equipment. This catalog is loose leaf in form and is handsomely bound in a red, laminated cellophane cover.

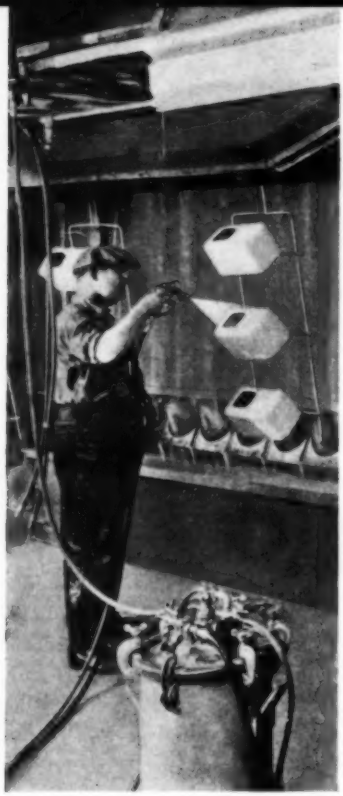
The catalog gives complete engineering data and specifications, together with prices on spray booths, spray guns, oil-and-water extractors, air supply and air exhaust systems, portable painting outfits and automatic finishing equipment, and all that pertains thereto.

A copy of this valuable catalog will be sent free to anyone addressing the sales promotion division of Binks Mfg. Co., on their business stationery.

Mahogany Book Shows Furniture

Beautifully figured mahogany grain and attractive mahogany furniture are illustrated and described in a new book published by the Mahogany Association, Inc., 75 E. Wacker Drive, Chicago, Ill. Contents include how to identify mahogany, common mahogany substitutes, mahogany veneers and plywood, how to judge quality in mahogany furniture, leading styles in mahogany furniture, the merits of mahogany and the sources of supply.

The book contains 24 pages 5¼ by 8¼-in., and is bound in a heavy paper cover that shows colored reproductions of various types of mahogany figure, such as narrow stripe, wide stripe, mottled, fiddle-back, crotch, swirl and flat cut.



How and why modern spray-coating systems work; what angle to point a spray gun and how far to hold it from surface being sprayed; how to determine what fluid pressure is needed; also, atomizing pressure; technique of correct spray finishing; lapping spray strokes; trigger action; the need of a well trained eye and non-glare lighting in the spray booth; care of spray guns; spraying with a purpose and getting more satisfactory results.

BY JAMES A. BEDE

More About

THERE are various methods of applying finish coatings, such as spraying, dipping, roller coating, tumbling, etc. Spraying, of course, is the predominant method due to its speed and adaptability to almost all conditions.

The scope of this article is to cover some of the problems confronting a man spraying from a pressure tank. The universal use of pressure tanks for volume spraying attests to their value, as compared to spraying from a syphon cup. The work goes much faster and it is generally of better quality.

The entire performance of the finishing department rests on the performance of the spray guns. The finest equipment and the most modern layout can mean little unless the spray guns are operated economically and at peak performance.

In any discussion of spraying, it is important to consider the physical action that takes place. The finishing material is ejected

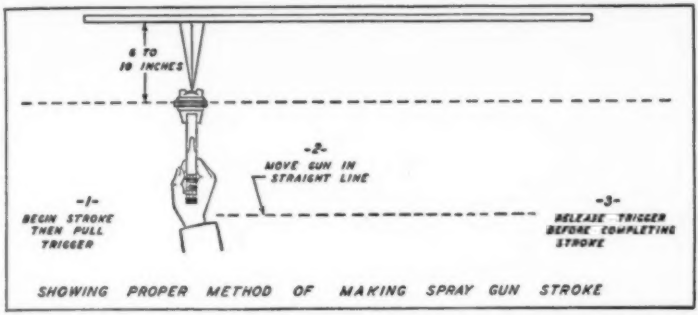


Illustration from the book "ABC of Spray Painting Equipment" by The DeVilbiss Co.

Modern Spray Finishing

through the fluid tip and immediately the rush of air that flows between the tip and the air cap starts to break it up. In the horns of the air cap are holes from which air streams emerge, which further break up the finishing material, completing the atomization.

How Paint Particles Reach Surface Being Coated

Now it is important to keep in mind one thing; the tiny particles of paint are not shot out, but rather they are carried along by the rush of air. In fact, the air is traveling slightly faster than these particles. When we spray an object, the bulk of the air stream does not touch its surface. It is deflected around it. However, the paint particles have a forward momentum which tends to carry them to the object. If it were not for this momentum, an extremely small percentage of paint would reach the surface toward which it is directed.

The paint particles that are deflected are the ones that are too finely atomized. They are such tiny particles that they quickly lose their momentum and become easily deflected. This percentage varies according to conditions and types of finishing material. Sometimes the paint loss is 25% to 30%, and even higher. If excessive spray mist is flying around, we have a certain indication that there is too much atomization.

Atomization of Material

From what has just been stated, we can arrive at these important conclusions:

1) The sprayer should use the least amount of air that will properly atomize his material.

2) The spray gun should be pointed at right angles to the surface being sprayed.

3) The spray gun should be held at a proper distance (6 to 10-in.) from the surface being spray coated.

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When is sufficient atomization reached? It depends, of course, on conditions. As a general suggestion, one can determine the proper point by cutting down the air pressure until it is definitely too low; then gradually raise it until just the right point is reached. The adjustment of air to the horns of the air cap, that is the "fan" adjustment, must be considered. Generally speaking, for heavy-bodied materials the adjustment is set wide open, but for thin materials it is cut down somewhat. It takes a trained operator to know when the right atomization is reached.

Angle and Distance of Spray

It is obvious that the spray gun must be pointed at right angles to the surface being sprayed. If it is held at any other angle, the air stream will carry off that much more of the atomized particles. A little careful testing will show a sprayer how wasteful a practice it is to spray at any angle but the right one.

Holding the gun too far from the surface results in a large percentage of essential volatile material being blown out of the spray before it reaches the surface. This, in turn, results in a dry or "flowless" film being applied. Only wet coats will flow out properly.

Fluid Pressure Is Important

An important consideration is the fluid pressure; in other words the force of the fluid flow and the volume of fluid that comes from the fluid tip. Two factors that can alter this—the pressure that is maintained in the pressure tank, and the size of the fluid tip and needle.

There is no definite formula for determining how much pressure to maintain in the tank. The ideal pressure varies according to the viscosity and solvent structure of the finishing material, the speed at which the sprayer works, the film thickness desired, etc.

There seems to be two schools of thought on how to determine the proper rate of flow of material. One insists that the trigger should be adjusted to pull the needle all the way back, with the flow regulated at the tank. The other tells us that a slightly excessive pressure should be maintained in the tank, but the volume should be cut down at the trigger. The former method should always be used because *the full trigger action of the gun is the easiest on the hand operating it. If restriction of fluid flow is necessary, then either the fluid pressure is too high or too large a nozzle size is being used.*

The average pressure tank can not be trusted to maintain a uniform rate of low pressure adjustment, although recently some delicate pressure-control apparatus has been made available for paint tank use. Here are the instructions submitted by an expert on installing and servicing modern spray equipment:

"For a general method of setting up spray equipment to spray the average material on average work, I recommend the following procedure: First, open the spray gun so that the trigger pulls all the way back. The fluid-adjustment screw will show the face of the first thread when set properly. In this position the spray gun will have the proper balance, the trigger spring tension will be less fatiguing to operate, and the needle will be clear of the fluid tip, thereby assuring longer life to the fluid tip and fluid needle. Also, it will assure the best possible spray pattern, which would eventually be dis-

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torded if operated with a restricted flow of material at the fluid tip.

"With the gun in the operator's hand and no air pressure in the paint container, we are now ready to establish the proper air pressures on both the atomizing air and paint-container air.

"As the atomizing air is secondary to the fluid pressure, set the atomizing air at a low point—let's say about 30 to 35-lbs. Now start to adjust the air going into the paint container. Pay no attention to the air gauge on the container. Continue to increase the pressure until you have the proper amount of paint for the part being sprayed and the speed of the operator, or the number of pieces required per hour. If too much material flows with less than 5-lbs. pressure, it would be well to obtain the next smaller size fluid tip and needle.

"With the material flow established, next adjust the atomizing air pressure to the lowest possible pressure required to obtain the results desired on part being sprayed.

"A point to consider here is the material and the quantity of solvents being dissipated between the air cap and the surface being coated. If the article being sprayed is one that requires several overlaps, where runs or sags cannot be prevented, increase the atomizing air only. This will result in more of the solvents being dissipated, and the paint will go on in a drier state or a semi-plastic state.

"Above all, consider the recommendations of the experienced spray-equipment salesman. He can give you the proper recommendations in regard to what size or type of air cap and fluid tip to use. Call him in if or when you are in doubt. Many dollars worth of materials can be saved in a year's time by using the proper air caps and fluid tips."

Technique of Correct Spraying

There is nothing that makes one sprayer stand out from the others so much as the manner in which he strokes the gun. A good sprayer

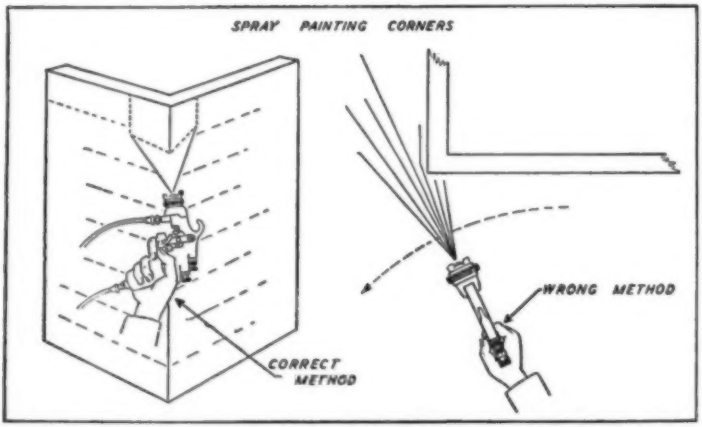

Illustration from the book "ABC of Spray Painting Equipment" by The DeVilbiss Co.

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Perhaps you have been so intent upon mechanical improvements from time to time that you have overlooked the importance of eye appeal.

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acquires a smooth even stroke. He keeps his gun pointed at the same angle and he holds it at the same distance from the work throughout the entire stroke. He should visualize the gun as being operated by a mechanical device which gives absolute precision.

When it is necessary to take a full arm-length stroke, the spray operator must guard himself against the natural tendency to follow the arc of his arm swing, that is, starting far from the work, coming close and then pulling away again at the end of the stroke. This is a mistake that would mark him as a mediocre sprayer. He should also point the gun so that the center of one spray follows the line where his preceding spray tapered off. In this way the strokes will overlap evenly and the resulting paint film will be of uniform thickness throughout. Unless he deliberately wishes to "dust" on his spray coats, he should not take his stroke too rapidly or with a whip-like motion. An extensive study of arm speed in spraying shows a movement of 200 to 250-ft. per minute.

It has been my observation that the average man does not develop into a first-class sprayer until after a prolonged period of work; in some cases it takes months; in other cases, years. He actually has to develop special muscles because spraying is unlike any other physical motion to which he has been accustomed. In the case of a relatively new man, his muscles will not carry him through an entire day of steady spraying. Excessive fatigue will cause his spraying to become jerky and erratic. Then he is more apt to turn out rejects, which may cause him to lose self-confidence; this, in turn, lowers his efficiency still more. Good spraying is based on an unfaltering self-confident mental attitude.

Spray Strokes; Trigger Release

In spraying an object, the sprayer should carefully determine which way he can spray it with the least number of strokes. He should by all means spray edges, hinges and recessed or protruding parts first so that he can finish up by spraying a wet coat over the entire object. If he reverses the process, there will be too much overspray dust showing on the main surface.

There is one more point that a sprayer should keep in mind. He must acquire the habit of automatically releasing the trigger when his gun passes the object he is spraying. At each end of the stroke, the gun should be carried past the object sprayed, but the trigger should be pulled back only when it is pointing at the work. To pull the trigger back and keep it there for stroke after stroke is very wasteful of material. In some cases that I have checked, this waste exceeded the value of the man's wages.

A Trained Eye Necessary

As important as it is for a sprayer to acquire a good stroke, there is one other thing still more important. He must learn to judge the depth and condition of the wet film that he is spraying. He must learn to know when the exact right amount of finishing material is built up on the surface. His eyes will tell him when to increase or decrease the speed of his stroke, and when to check the distance he holds the gun from the work, etc. It takes a well trained eye for this. He must learn to judge when the gun is atomizing properly. He must learn to know when the finish is over-atomized and going on too dry and dusty, or when it is insuffici-

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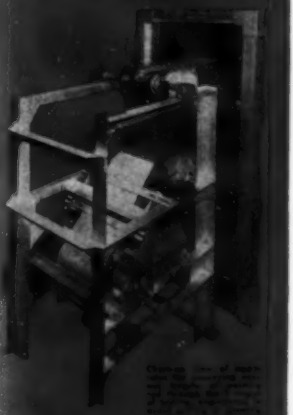

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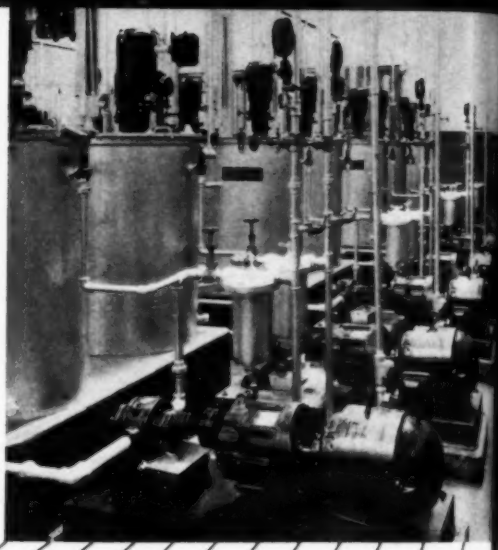

IF YOU ARE USING 20 GALLONS OF PAINT A DAY OR MORE . . .

Here is a chance to cut costs!

IN hundreds of America's best known industries, BINKS PAINT CIRCULATING SYSTEMS, big and small, are proving their ability to cut finishing costs and increase control. It will pay you to investigate this modern means of handling paint. Write today for full particulars.

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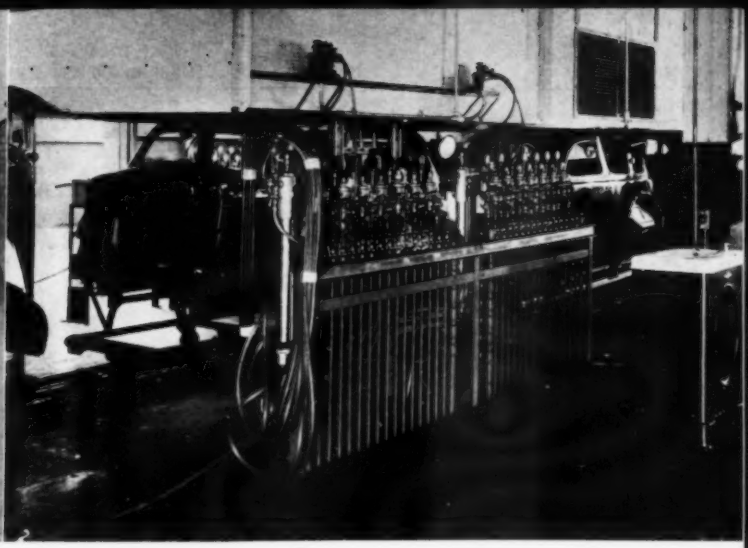

GREATER ECONOMY

A Binks Paint Circulating System

- Eliminates the handling and trucking cost of transporting paint to and from the booths.
- Eliminates material and labor cost of cleaning paint containers.
- Eliminates costly rejects. No dirt or off-color paint to spoil finishes.
- Reduces floor space requirements to a minimum.
- Reduces fire hazards.
- Provides better working conditions.

GREATER CONTROL

Only with a paint circulating system is it possible to obtain uniform, standardized finishing.

- Viscosity and color are easily controlled by mixing larger batches of paint under ideal conditions.
- The closed paint circulating system delivers identical paint to all operators at all booths.
- BINKS material fluid pressure regulators with removable key at the booths make it possible to maintain uniform fluid pressure at all guns.
- With uniform viscosity, color and pressure assured, the Paint Superintendent can assume responsibility for uniform results throughout the finishing room.

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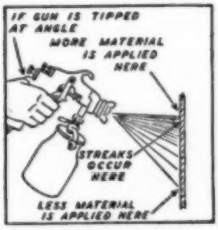
ently atomized and going on too wet and heavy. He must, above all, know when the gun starts working improperly because of an accumulation of paint clogging an air port, or for some other cause. He must familiarize himself with the finish he is spraying and know how much can be applied without sagging.

Proper Lighting of Spray Booth

Proper lighting is closely related to a sprayer's ability to see what each spray stroke is accomplishing. It is not sufficient that the operator be able to clearly see the object he is spraying. That, definitely, should be taken for granted. There should be diffused light coming from such angles that he can readily sense and closely estimate the depth of wet film he is spraying on the object. An experienced person can tell at a glance the thickness of glass in a mirror by the depth of the reflections. A spray operator must judge the depth of coatings he sprays in the same way.

If the light comes into the booth at such an angle that he cannot correctly judge the depth of his film, then he must play safe and take an extra stroke or two. This extra stroke or two, multiplied perhaps thousands of times a day, is a very important though hidden cause of waste and possible rejects. Too much attention cannot be given to proper lighting of the spray booth, for we must keep in mind that a sprayer's accuracy cannot be better than the accuracy of his vision.

By "proper lighting" I do not mean excessive wattage because that only produces glare. What is needed is diffused light coming in from all the necessary angles. Fluorescent lighting, which comes from a linear source instead of from "points" or "spots", and which is diffused so it casts no shadows, is ideal for this purpose. In the final analysis, the test is whether the sprayer can actually see well enough to accurately control the



From the book "ABC of Spray Painting Equipment."

film he is spraying. Only a very small percentage of the spray booths this writer has seen fully meet this requirement.

Care of Equipment; Spraying for a Purpose

Care of equipment has been thoroughly discussed in recent issues of this magazine, so I only wish to re-emphasize these points: 1) Never soak a gun in thinner overnight. 2) Never use wire to open an obstruction in an air-cap; use a broom straw or toothpick. It does the job better than wire and will not damage the cap.

The spray finisher often has a definite objective set before him. He may be required to spray a very thin coat or a very heavy one to obtain the maximum build. He may have to produce a flawlessly smooth finish over a rough porous metal. He may have to spray so as not to show up metal imperfections. Then again, he may be required to consider appearance secondary in obtaining the maximum protection from the elements.

The airplane industry and the rearmament program call for a fin-

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Free the Key Log!

● There is no real reason why Finishing should be the key log in a jam that is blocking manufacturing progress. Methods and equipment that were adequate to meet the needs of industry when it was running at a fraction of capacity have no business holding up production now.

Improved coating materials have contributed greatly to the present progress of every type of industry whose products require coating or finishing. They have brought greater manufacturing speed and economy, while public buying has responded to new, more beautiful finishes.

These *modern* finishes demand *modern* spray equipment, whose design and capacity—from air compressor to spray gun tip—meet their specific requirements of application.

If *your* spray equipment is obsolete, adapted to materials and schedules you no longer use, you'll find replacement a profitable investment. It will repay you in greater coverage, reduced handling, less spoilage, elimination of refinishing, and more sales appeal for your products. Ask today to have one of our engineers show you the complete DeVilbiss line of modern spray finishing equipment designed for modern finishing methods and materials.

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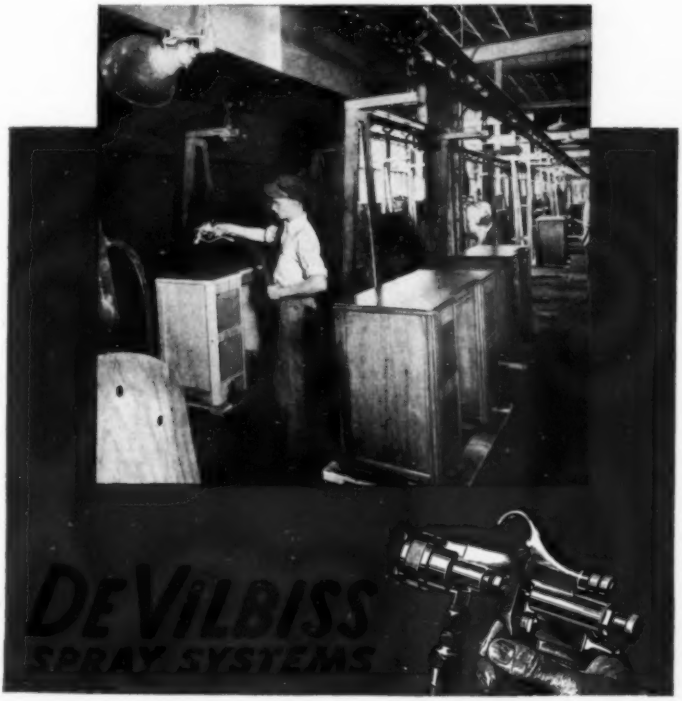


ishing method that affords the greatest possible protection. These and other requirements should receive close attention. To a modified degree, the same finishing material often can be worked to obtain the objectives mentioned here. Even the luster of a finish can be altered by the way it is thinned and sprayed.

There is a limitation to what the spray finisher can juggle. He certainly cannot, for example, make a flexible elastic finish out of a material that is "short" and brittle. The paint manufacturer must formulate the finish to meet desired requirements; but the accomplishment of the objective largely rests in the hands of the finisher. He will accomplish it by carefully analyzing all of the factors involved and working out a practical plan accordingly.

Dip Finishing Metal Recording Discs

THE POPULARITY of home-recording radio sets has developed a large market for paper and thin-metal recording discs, coated with several applications of special lacquer material. Application may be by spraying or roller-coating, but it is more frequently by dipping under closely controlled conditions of viscosity, evaporation rate, speed of revolution of the discs, drying time between coats, and other factors that influence the development of a smooth, sag-free, uniform coating.

The dried film must be about .007-in. in thickness; it must have the right degree of softness to permit easy, noiseless recording, yet it should be hard enough to avoid damage while playing the record. It must be flexible enough to stand bending; be adhesive enough to prevent peeling; be fire resistant, to avoid the danger of accidental ignition from a cigarette or match; and, after recording, give the finished appearance of a commercial record.—J. CARSON.

Lacquer and Synthetic Enamel Book

A new book by Ray C. Martin, Consultant, Research and Development Chemist, and author of a number of articles in trade publications, reveals a wealth of practical and uptodate information about lacquers and synthetic enamels. Mr. Martin takes up the raw materials that enter into the manufacture of these important finishes and includes laboratory formulations and testing, manufacturing methods, requirements of many types of finishes for various industries and products, methods of analysis, methods of applying finishing materials, chapters on furniture finishing and automotive finishing, a glossary of terms used in the industry with clear explanations of what they mean, and an alphabetical index of subjects covered in the book.

Many nationally known manufacturers of materials, equipment and apparatus have contributed information and illustrations for use in the book. It is interesting and easy to read. Everyone who reads INDUSTRIAL FINISHING would probably like to have a copy of this informative and authoritative book at hand for frequent reading and reference. It isn't too technical for the average reader.

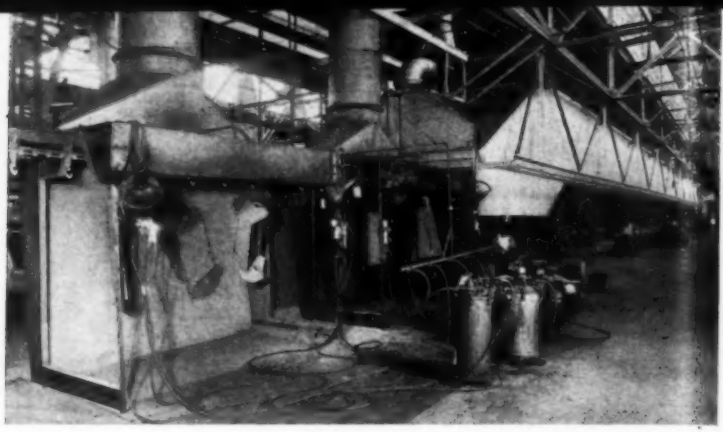
The book contains 526 pages 6x9-in. It is well printed on high quality paper, has 100 illustrations including many charts and diagrams, is handsomely and substantially bound in black stiff covers and lettered in gold. It is attractive and expensive looking, but it can be obtained through INDUSTRIAL FINISHING Magazine for only $5.50.

Aluminum Industries' New Unit

Due to the rapid growth of its business, Aluminum Industries, Inc., Cincinnati, Ohio, manufacturer of Permite automotive and aircraft parts, aluminum and magnesium alloy castings and Permite Ready-Mixed Aluminum Paints, has started construction of a new plant unit containing 150,000 sq.ft. of floor space. This unit is the first of several to be built on a large tract of land recently purchased by the company.

a Review of Equipment

for cleaning and smoothing surfaces, making ready and testing materials, handling work in process, applying all coatings and decorative effects, drying or baking the finish, rubbing and polishing the hard surface film.



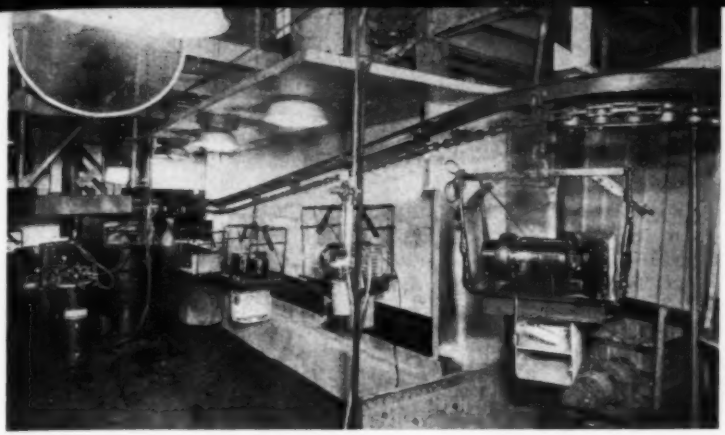
Photograph, courtesy of The R. C. Mahon Co.

a Review of Equipment

MORE OF EVERYTHING mechanical has entered modern finishing rooms in the interest of speed, controlled uniformity of results, and economy. Cleaning and smoothing surfaces to be coated; testing, mixing and applying coatings; moving the material and products in process; putting on decorative effects; conditioning the compressed air, the room air and the drying air; applying heat for quick drying; rubbing and polishing the final coating; measuring film thickness; testing for durability—all of these jobs, and more, can be and are being performed mechanically, pneumatically or electrically, and in many cases automatically.

A greater variety of equipment has been developed, improved and made available so that now economical mechanized cleaning and finishing can be adapted to practically all kinds of products manufactured under various conditions in large factories and small ones.

The adaptability and variety of this industrial cleaning, coating and drying equipment has been put to good use in the plants that have suddenly tooled up for manufacturing prod-



Photograph, courtesy of The DeVilbiss Co.

for the Finishing Room

ucts essential to National Defense. In this work quality and speed are paramount factors. For example, spray equipment manufacturers have quickly devised several remarkably efficient machines for spray coating the inside and outside surfaces of shells—applying coatings that meet the very exacting Government requirements and specifications for durability and uniformity.

More streamlined finishing installations are being put in. By this we mean conveyorized "line production" installations wherein products in process are not moved or handled manually (or where handling is at a minimum) but are conveyed automatically through the entire sequence of cleaning, finishing and drying operations. Completed products coming off the line are immediately ready for inspection, packing and shipping. Completed parts are ready for assembly.

More interest has developed in bake finishes, especially since such excellent synthetic materials have been made available, plus improved ovens and the infra-red process of quick baking with banks of electric lamps. Improvements in ovens

Removing paint beads and drips from dipped work electrically is really a wonderful improvement for those who use the dipping process of coating articles, as it has always been a very difficult job to remove the drops and fat edges on dipped work. This new method affords greater safety, especially where the coating is baked. I have had an oven on fire many a time because of fresh paint dripping in the hot oven. I am sure that during this year many firms will adopt this method of removing drips and fatty edges from their dipped work.—L. A. Van Arnam.

and infra-red apparatus, including the development of smaller units, have helped to bring bake finishing within easy reach of small shops.

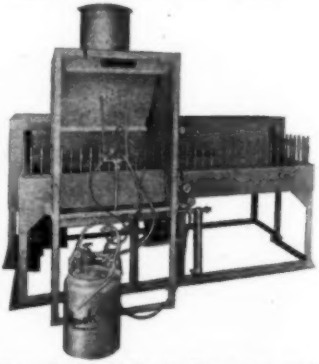
Small portable machines for smoothing surfaces to be painted and for rubbing, buffing or polishing the final finishes are available in greater number and variety—with rotary, oscillating or reciprocating pad motion—air driven and electrically driven. These are priced low enough to place them in the small shops too.

Paint-circulating systems—once used only in large automotive plants—have also been simplified and made adaptable to the smaller establishments. They have real merits well worth investigating where there is reasonably steady production on articles that have a standardized finish.

Reviewing everything mechanical down the line, the improvements that have been made help to place more labor-saving apparatus at the disposal of more finishing rooms. We see fading out of the industrial picture the old-time all-round hand painters and hand finishers, while into sharp focus comes thousands of expert operators who have skill and knowledge in the control of many kinds of mechanical, pneumatic and electrical finishing-room equipment.

Also to the forefront have come the engineers of several companies who are specializing in the design and installation of complete streamlined finishing-room layouts. These men are well informed in several kinds of engineering—mechanical, electrical, hydraulic, pneumatic and chemical. They are familiar with the requirements of the day and, as a result, the modern finishing room has been elevated to a remarkably high standard in point of efficiency, economy, safety, ventilation, lighting, cleanliness and healthfulness—a far cry from the old finishing rooms in which hand painters and hand finishers once toiled long hours.

Automatic Airfinishing and Drying Unit — For the application of black paint to 20-m.m. shells at a rate of 17,000 per 8-hour day. The unit includes special automatic aircoating and



The spindles rotate as they carry work past the automatically operated airbrushes.

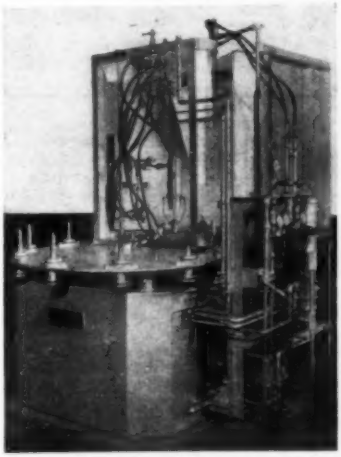
drying unit approximately 8-ft. long by 3-ft. 9-in. wide, equipped with steel roller chain, supporting 164 revolving spindle assemblies, automatic off-and-on control for airbrushes, varying speed pulley and reducer to operate the chain at speeds of 4 to 9 lineal feet per minute, all mounted to structural steel frame, electrically welded.

The unit includes one electrically-welded drying oven approximately 8-ft. long by 1-ft. 8-in. wide by 1-ft. 6-in. high, insulated with rockwool and equipped with electric strip heater, thermostatically controlled to provide the required range in temperature. Unit also includes automatic airbrushes; "Clamptight Cover" pressure-feed material tank; water, oil and dirt separator to provide clean dry air, including regulator and gauge; and exhaust unit with explosion-proof motor; spray booth and duct to fan.—Paasche Airbrush Co.

Automatic Shell Coating Machine—Automatically coats both the inside and outside of the shell. Hand loaded and unloaded, the shells are placed on holding spindles located on the edge of a rotating table. The table carries shell first to interior spraying position.

To the rear of the table (see illustration) will be seen a shell into which is inserted an overhead spray gun with extension nozzle. This is the interior coating operation. After the gun nozzle is removed from the shell interior, the table revolves to the exterior painting position. While shell rotates on the spindle, properly positioned automatic guns coat exterior.

The production and finishing requirements of users vary to such a degree that every job has to be solved on the basis of the problems involved. Machines have been designed and are in use to finish shells ranging from 37 to 105-mm. Tail pieces for various sizes are also painted on a machine



This machine automatically sprays the inside and outside of shells.

similar to the one in the photograph, as are sub-assemblies of fragmentation bombs.

Production of our automatic machines range from 300 to 1000 shells per hour; tail pieces can be finished at a rate of from 720 to 2400 per hour, while fragmentation bomb sub-assemblies are coated 300 per hour. Some of our machines have been equipped with special loading and unloading mechanism and some with ultra-red-ray dryers.—The DeVilbiss Co.

Waste comes sneaking. It can camouflage itself to look like a necessary part of your process. It can graft itself into your manufacturing operations, a bit at a time —gradually forcing production costs higher, or narrowing or destroying profits . . . But there is a brighter side. Much waste is preventable. The enormous loss that industry is now absorbing each year through thoughtless, old-fashioned methods and equipment can be turned into savings. Read Industrial Finishing Magazine carefully to learn how this can be done.

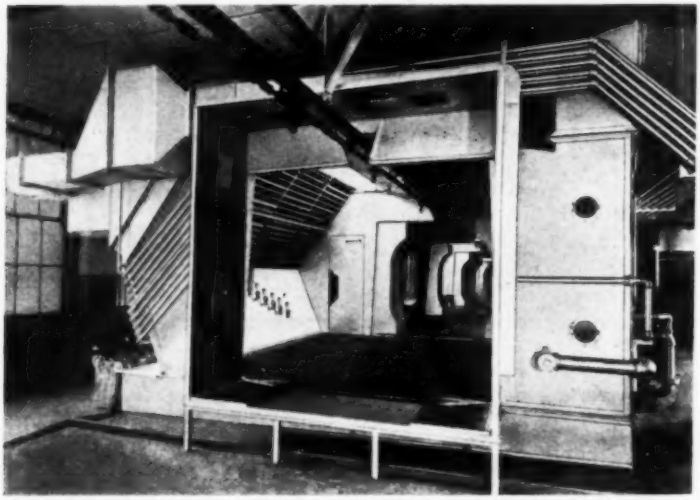
Many an unsuspected bulge in the ultimate cost of manufacturing takes place right on the receiving platform. One man and an industrial truck of suitable design can unload and store incoming materials in but a fraction of the time required by obsolete methods.

Hydro-Whirl Spray Booth—Incorporates a new principle in construction. By virtue of a changed direction of air force, the paint is trapped before it has had the opportunity to travel very far into the booth. Consequently, all the pigment is brought down almost immediately after its impact with the water, into the sludge tank below, where it can easily be skimmed off. All this is achieved through the proper balance between the speeds of air and water and the static pressures. The manufacturers claim that the necessity for cleaning the spray booth is thereby almost obviated and maintenance costs become negligible.

The unit may be used singly or as a part of a continuous string of booths. In the latter fashion, the arrangement is staggered and so constructed as to allow no possibility of overspray. Washed, filtered, and temperature-controlled air is supplied to each unit in a perfect balance between supply and exhaust. This system lends itself to operation at fullest efficiency, whether production is down to a minimum or up to its maximum.—Industrial Sheet Metal Works.

Agitator and Circulating Pump Units—No. 460 Series combination agitator and circulating pump units, for use in spray finishing work. Perfected for the large automotive plants in Detroit and elsewhere, these new units will serve the needs of all industries where a small paint-circulating system is desired.

This unit is adaptable to all Binks TU Type tanks, and is ideal for multiple spray gun operation, and for short pipe runs. The unit can be mounted on the tank as shown, or it



"S" or staggered construction spray booths with "hydro-whirl" and overhead conveyor.

For small paint-circulating systems.

can be mounted above the tank and driven by a flexible shaft. Air or electric motors furnish the driving power.

The new unit gives all the advantages of a stationary paint-circulating system, and yet is easily portable, making an ideal system for special colors and for short runs of standard colors. Diagrams of typical hook-ups will be furnished on request.—Binks Mfg. Co.

Portable Compressor for Spray Painting—Three highly desirable factors—modern streamline design, moderate price and unusually high efficiency—have been combined effectively in the development of this new portable air compressor unit for operating small spray-painting equipment. Designated the modern successor of the company's former NK outfit, the new outfit is known as Type NKB.

Encased in a streamlined housing, not dissimilar in appearance to a neat portable radio set, the new NKB's rugged construction and generally

In connection with the Defense Program for both the United States and Canada, we have developed many interesting installations for coating shells of various sizes. In the specifications given elsewhere, we describe a unit for 20-m.m. shells, of which we have already placed a large number in manufacturing establishments throughout the country.—Paasche Airbrush Co.

stepped-up efficiency permits it to do the work normally assigned to many of the ¾-h.p. and 1-h.p. units now on the market.

It is particularly suited for interior and exterior painting in factories, and the spray-finishing of automobiles, furniture, refrigerators, trucks, buses.

Quiet in operation and weighing only 72-lbs., the compressor is readily portable. It is equipped with four rubber-tired swivel casters. Actual delivery is 4.55-cfm. at 45-lbs. pressure. It holds medium spray guns at from 32 to 40-lbs., while maximum pressure is 50-lbs.

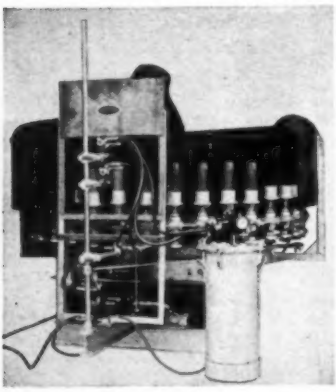
Not a radio; a compressor ½-hp.

The smart streamlining of the new unit is enhanced by an exterior finish in 2-color crystaline enamel. Its construction features insure consistent operation without breakdown or repairs. The new unit is available alone, or may be had with four different spray equipment assemblies—The DeVilbiss Co.

Portable Degreasers—Can be plugged into electric outlets near place where work is to be done. Simple operation by means of hot vapors which are non-inflammable. The hot vapor condensing on the parts, removes all oil and grease. Parts are removed clean and dry ready for painting. For ordinary cleaning, the operation requires only a few minutes. One and one-half gallons of cleaning solvent, which is the solvent capacity of the smallest model, will clean from one to three tons of work, depending upon the type of work which is being run. These degreasers are electrically heated and controlled.

A larger model takes four gallons of cleaning solvent. The solvent is reclaimed and distilled within each machine. The vapors used are four and one-half times heavier than air. The vapor level is maintained within the tank electrically. No water jacket or steam lines are required. Solvent loss is reduced to a minimum, as it is used over and over again.

Projectile Painting—The painting of projectiles from 37-mm. up to 155-mm. can be handled automatically with a special machine like the one illustrated here. This machine consists of a 7-ft. indexed turntable with 36 rotating spindles carrying the shells in front of automatic spray guns that are synchronied with the turntable. After being sprayed, the projectiles are carried through a steam-jacketed tunnel-type drying oven mounted on the table opposite the spray guns.



Sprays and dries the finish automatically.

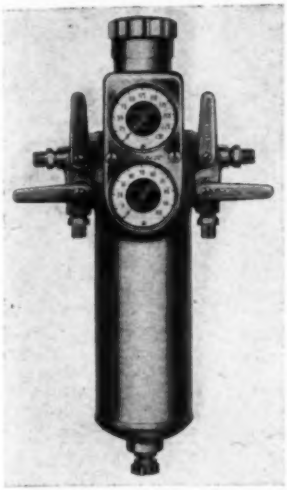
The shells are placed on the table, and removed, manually. The rate of operation is 500 an hour when 6-minute pyroxylin lacquer is sprayed.—Eclipse Air Brush Co.

Air Transformer—A new air transformer, radically modern in its streamlined design and an outstanding development in equipment for the spray-painting process.

This transformer supplies the spray gun clean moisture-free air at uniform regulated pressure. It offers greatly increased capacity, improved filtering facilities and more sensitive regulation and control of pressure; handles in excess of 50-cu.ft. of air per minute, with a minimum of pressure drop; will pass ample air for two production spray guns in continuous and simultaneous operation, or for three spray guns in ordinary, intermittent production use.

Constructional features include a large synthetic rubber regulator diaphragm, refined operating mechanism, and a big conveniently located regulator knob. These result in a fine degree of sensitivity in pressure regulation and positive control of pressure, once it has been set.

An extra large condensing chamber offers greater air expansion and more thorough condensation of moisture. Further effectiveness in air cleansing



Filters air; regulates pressure.

is accomplished by an improved baffle arrangement. A new and unique mechanical filtering device gives continuous filtering efficiency without wear or attention. The new metal filter, wholly mechanical, eliminates the old-fashioned cotton waste pack and the necessity of its repeated removal and replacement.

Enclosed pressure gauges with modern dial treatment and a die-cast body complete the streamline style of the transformer. The cylinder is chromium plated and highly polished to prevent any accumulation of dust, dirt and paint, so that the exterior of the equipment is easy to clean and to keep clean.—The DeVilbiss Co.

An economical substitute for the felt pad, which is used to prevent many products from marring furniture, is provided by a "flock" finish. This finish is formed by blowing small pieces of cotton or rayon flock on to surfaces covered with a special adhesive.—M. & W. Co.

"Clamptight Cover" Pressure-Feed Material Tank—This tank is designed for manufacturers and painting contractors who require pressure-feed application at working pressures not exceeding 50-lbs. The tank is of heavy cadmium-plated steel and is equipped with the patented "Clamptight Cover" feature supplied on the more expensive high-pressure tanks. This easy-opening, easy-locking feature, makes it possible to remove and replace the cover in a few seconds. The tank comes complete with safety valve, has

Easy to open or close and lock the cover.

accurate airpressure regulator with easy-to-read gauge, is easy to move about—has large fluid tube with strainer and all fittings have standard ¼-inch. pipe thread. This new light-duty pressure-feed material tank is known as type F613L, size 2 gallons and is supplied complete with regulator and gauge.—Paasche Airbrush Co.

Portable Spray Equipment—A new series of small spray-painting outfits, known as the NCB.

Although the line consists of five different spray equipment assemblies, all outfits are built around a radically new and different ¼-hp. motor-driven air-compressing unit. Three are cup-

Featuring streamline design and performance that is efficient, economical, dependable and satisfactory

gun outfits and two include a pressure feed paint tank of 2-gallon capacity.

The air-compressing unit is composed of a ball-bearing, piston-type compressor, directly connected to a standard ¼-hp. motor. These, together with the air strainer, crank case and pulsation chamber, form an integral unit enclosed in a streamlined housing. The exterior surface has been given an attractive crystaline finish in two colors.

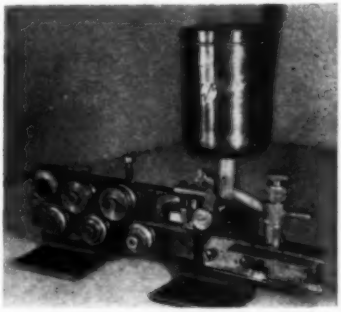
More outstanding than its design is the performance claimed by the manufacturer. The unit is said to have the capacity of most 1/3-hp. and many ½-hp. outfits; rated displacement is 4.3-cu.ft. of air per minute at 40-lbs. pressure; actual air delivered at this pressure is 2.6-c.f.m. maximum pressure, 50-lbs. Construction is sturdy and the outfit will perform consistently without breakdown or repair. The unit is compact, light weight and easily carried; provided with four rubber feet, the outfit is free of vibration and will not crawl.—The DeVilbiss Co.

Automatic Striping Machine—A striping unit that can be used by hand as a portable tool and moved over or across surfaces to be striped, or mounted singly or in multiple to apply stripes to various products which are fed past it by power.

The accompanying illustration shows a single unit set up to roll a color stripe on narrow metal strips which are being fed under the striping wheel by power. A cylindrical reservoir supplies fluid by gravity. The rate of flow of fluid to the serrated wheel can be controlled by turning an adjustable screw which is located directly above the wheel.

For running stripes on vertical or angular surfaces, the position of the reservoir is changed so that the gravity feed arrangement will function satisfactorily.

The feed rollers and frame, which guide the metal strips to the striping roller, are custom built to suit the job. This same set-up can be used to lay single or multiple stripes on automobile mouldings or any other similar products. Units can be set up in multiple to stripe the grooves in tile board and a variety of other products. —Wendell Mfg. Co.



Laying on continuous stripe automatically.

Gives you long reach and perfect control.

Extension Spray Gun—For painting large surfaces beyond the natural reach of the operator, without the use of scaffolding and staging. The operator stands on the floor, and as the extension gun is supplied in lengths up to 12-ft., he can paint the average wall and ceiling without having to climb.

Surfaces below the level of the operator can also be safely handled with extension gun equipment. The extension gun is also useful for painting large surfaces such as railroad cars, bus and truck bodies and ship hulls.

The Type EX extension has a detachable gun grip control, and different lengths of shaft can be used in the same grip. The shaft turns in the grip so that spray can be in any direction. The spray head is supplied in either of two standard models to insure the proper application of all types of materials.—Eclipse Air Brush Co.

Everyone looks forward to your Annual Review and I, for one, read every word. As to furnishing you with ammunition, I hardly know what to say. Your magazines, during the year, cover new developments so completely that it is really a review of your 1940 issues. — Everett Damon.

Interlocking Hose Clamp—A split-sleeve type of metal clamp for permanently fastening the end of material hose or air hose over the nipple of a hose connection. It locks the hose nipple so that it cannot be pulled out of the hose, regardless of the condition of the inner liner of the hose. The clamp is made from an alloy that will stand compressing around the hose under heavy pressure and when so compressed it will hold its shape and tension. It is easily compressed around the hose with "closing blocks"

Cross section of clamp in position.

held in special tongs or in a vise, or it can be closed with a hammer. The clamp will work with practically any barbed-type connection. Clamps are available for ¼, 5/16 and ⅜-in. air or fluid hose. Patents have been applied for by Mr. S. B. Beugler, the inventor.—Beugler Mfg. Co.

Small Paint - Circulating Systems—These systems are of special interest to the smaller manufacturers because they make available all of the economies, safety, and the convenience represented in the circulating system of delivery.

The small circulating systems will supply a maximum of six production-type spray guns in continuous operation, handling such materials as lacquers, synthetic enamels, paints, varnishes, shellacs, etc.

Heart of the new system is the tank assembly. The container is a standard Type QM unit (with agitator), 30 or 60-gallon capacity. The motor-speed reducer-pump combination, mounted compactly on a small platform on the lid of the tank, has been designed especially for this application. Either air or electric motors are available.

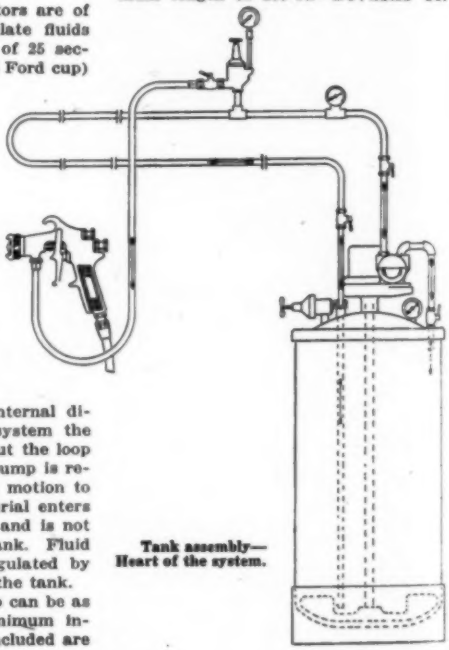
Both air and electric motors are of sufficient capacity to circulate fluids with a maximum viscosity of 25 seconds (determined on a No. 4 Ford cup) against an average loop pressure of 50-lbs. per square inch.

The pump has no packing gland, incorporating, instead, an unique mechanical seal which insures much greater resistance to wear.

Three QMB Systems are available. System "A" is the simplest in design and the least expensive to install. It delivers fluid over a loop no longer than 200-ft., with a minimum internal diameter of ½-in. In this system the material is forced throughout the loop by air pressure, while the pump is required merely to keep it in motion to prevent precipitation. Material enters the loop only as it is used and is not recirculated through the tank. Fluid pressure in the loop is regulated by varying the air pressure in the tank.

With System "B" the loop can be as long as 450-ft., with a minimum internal diameter of ¾-in. Included are individual fluid regulators for each gun, thus providing more accurate fluid pressure control than is possible with System "A". The material is kept more uniformly mixed by being constantly recirculated through the tank by means of the pump which produces a pressure in excess of that in the tank.

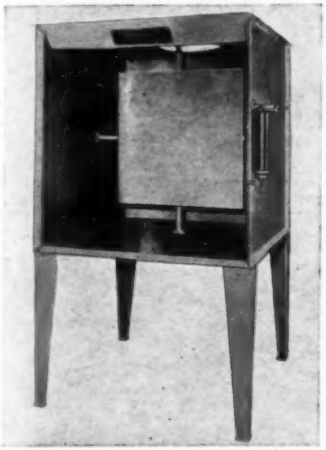
With System "C" the fluid is recirculated through the head of each gun. This is recommended for materials difficult to keep in suspension, or which otherwise alter their physical characteristics when allowed to remain stationary for relatively short periods. With this system individual fluid pressure regulators for every spray station are provided, as well as a relief valve at the beginning of the low pressure return side of the loop. Piping should be limited to a minimum internal diameter of ½-in. and a maximum length of 200-ft.—DeVilbiss Co.



Tank assembly—Heart of the system.

Interchangeable Panel Spray Booth—A small low-cost spray booth made of five 3½-ft. square, interchangeable, 22-gauge, sheet metal panels. It is furnished with or without 31-in. legs. The panel with the 15-in. exhaust fan can be placed at the back, top, bottom or on either of the two sides, according to the requirements or preference of the user. Extra equipment includes exhaust piping, 90° elbows, roof flange and weather canopy, all 15-in. in diameter.

The exhaust fan is built to meet Underwriters' specifications. The motor is mounted outside the exhaust duct on an adjustable base. A V-belt drive



Available with or without the 31-in. legs.

extends through a dust-tight housing. The fan is mounted on Oilite sleeve bearings. Fan blades are non-sparking and non-corrosive. The motor is of the ball-bearing type and approved for spray booths.—Binks Mfg. Co.

"CUB" Airbrush—Is new and different in many ways. The new easy-grip, black tenite handle, the new larger easy-pull trigger, the new knurled tenite fluid-lock-control—these are new features instantly apparent.

The new calibrated control of spray and the larger, more-easily-removed and easy-to-clean air cap are new features that help to do away with defective spray patterns, orange peel, streaks, runs and sags, air and fluid leaks, excessive mist, etc.

The shorter fluid passage increases coating speed and prevents clogging; light in weight and very easy to handle. The shorter, stronger needle,

Paasche Type CUB Airbrush

with efficient cone-shaped point, prevents clogging. There are only two parts to keep tight.

This universal type airbrush atomizes all finishing materials at high speed, under perfect control, and provides a wide wet spray. It may be used with pressure tank or overhead gravity bucket, or syphon cup; is adjustable both for any air-pressure or any air-consumption. — Paasche Airbrush Co.

Providing directional instantaneous controllable heat, the new Hall thermalamp promises industrial acceptance of electric heating for a widespread variety of applications at surprisingly low cost. To some industries this means substantially reduced time for the production cycle. To others it means savings in floor space, reduced handling, fewer rejects, or better quality results. In fact the advantages are numerous and varied—C. M. Hall Lamp Co.

"Staynew" Water Filter—For the complete removal of dirt, rust, pipe scale and water from paint-spray air lines.

The new filter, known as the Model CPHLS for water filtration, has already proven its value, under actual working conditions, to users of humidifying apparatus, chemical plants, etc.

Construction is simple and filtering action is positive. All water passes through special fabric filter mediums that have the advantages of high efficiency plus minimum restriction to water flow—advantages which are increased by the radial fin construction. This construction permits a large area of filtering medium to occupy a relatively small space. For example, a radial fin construction insert only 11-in. high by 8¼-in. in diameter possesses an active filtering area of 1325-sq.in.

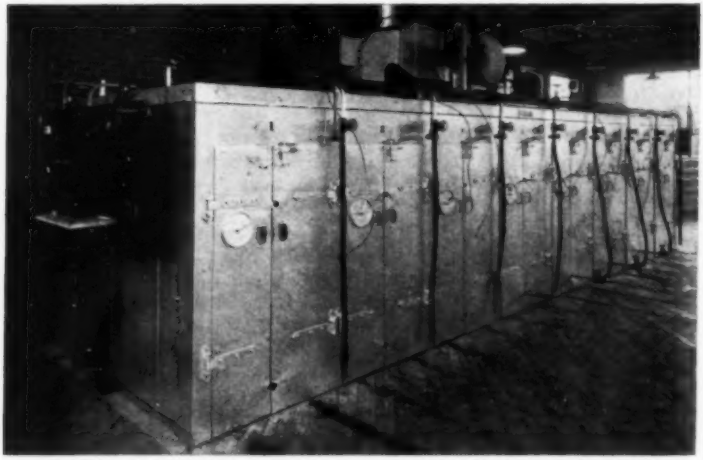
There are no moving parts in the new filter, and the large filtering area permits long periods of operation without any attention whatever. When necessary, the entire insert can be easily removed by merely unbolting the head and removing one wing nut. The units can be arranged so that cleaning is effected by backwashing with clean water. — Staynew Filter Corp.

GKS Standard Truck-Type Ovens—Available in three basic sizes, and may be operated by electricity, gas, oil, or steam; may be heated by indirect or direct-fired heaters.

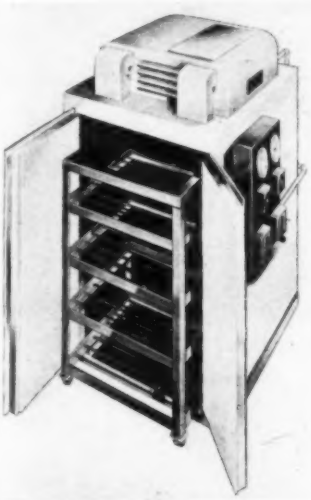
These ovens are so designed that they may be increased in depth or width by any standard unit. The depth of each oven may be increased by any multiple of 28-in. sections, and the width may be increased by any number of complete compartments.

Completely protected by all necessary safety controls and equipment, these ovens may be used in practically any location.

The heater platform is fabricated and built up at the plant, and shipped out as one unit. On the heater platform are the heater, the recirculating fan, the fan motor, and the air-flow switch.



Several GKS truck-type ovens arranged to operate side by side for quantity production.



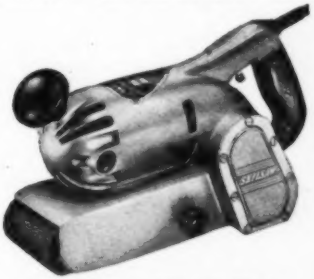
A single truck-type oven unit.

The panel is likewise built at the factory with all the internal wiring complete and ready for connection to the power circuit. Included in the control panel are the indicating controller, the flame protection device, safety and control gas valves, the high-limit temperature switch, motor starter, and other accessory equipment that the user may desire.—George Koch Sons.

Cup Airbrush Heater—Heats material to be sprayed to as high as 350° F. According to the manufacturer, "Many of the world's largest industries have found this electrically-heated air and material airbrush especially suited for laboratory testing and development work."—Paasche Airbrush Co.

Portable Belt Sander—A lightweight 2¼-in. belt sander called "Zephyrplane Junior" has a die-cast aluminum frame for lightness and strength, ball-bearing construction and a powerful sturdy universal motor.

Other features of safety and convenience are: A Bakelite handle for cool comfort, a safe trigger-type momentary switch and a patented "touch-control" lever which permits quick changing of belts. The belt travels at a speed of 600-ft. per minute, is kept uniformly taut by a coil spring, and



The machine weighs only 9½-lbs.

I have been very much interested of late in the improved equipment that has been developed and come into service in finishing departments. For instance, look at all of the conveyor systems that have been installed. They are a success in all ways—saving labor and time, making it easier for the operators, giving faster and more uniform production throughout the day and eliminating many lost hours. Operators at work stations do not have to go after their work; the work is brought to them, thereby saving many unnecessary steps that would be so much lost time to the company. Articles to be finished are placed on the conveyor at the start and taken off at the end completely finished. They pass at an even speed through the sanding, filling, staining, finish coating and drying of the work in furniture production. In the metal lines the work is washed, dried, bonderized, sprayed or dipped, drained and carried through ovens to be baked.—L. A. VanArnam.

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can be easily centered by a simple adjustment. A variety of belts are obtainable, adapting the tool perfectly for use on wood and metal, for removing varnish, for smoothing surfaces, and for polishing.

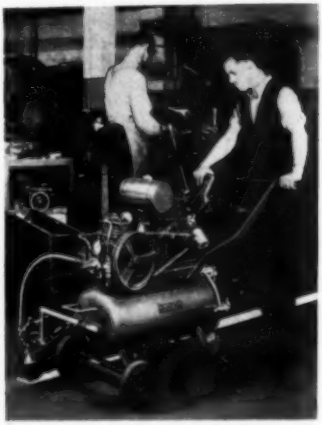
The machine has been designed by experienced engineers to provide perfect balance so that uniform pressure is applied over the entire sanding area. This helps to produce a perfectly smooth ripple-free surface faster and more easily than by hand sanding.—Skilsaw, Inc.

Automatic Water Drain for Air Lines—Simple in construction, positive in action, and thoroughly trouble-free in operation. Available with four convenient fitting assemblies, it is intended for installation in air lines, on air compressing outfits, or air receivers.

This device automatically drains the air line or air receiver, preventing water from being carried into the tool being used. It thereby prevents rusting and corroding, and assures a supply of air free of any moisture. It eliminates the necessity of daily hand draining, and provides positive protection against such factors as carelessness, oversight, or unusual atmospheric conditions. The new water drain is operated automatically by a slight fluctuation of the main-line air pressure. A variation of as little as 5-lbs. is sufficient for its operation. A manual drain is provided for use in periods when the main air line is not in use.—The DeVilbiss Co.

The increased emphasis on safety in industries, engaged in the rapidly expanding defense program, has resulted in the development of many new safety products and techniques.

Spray Line Marker—A complete self-contained portable spray unit for marking traffic lines on highways and city streets and in warehouses, airports, steel mills, large factories, and wherever traffic lines are important.

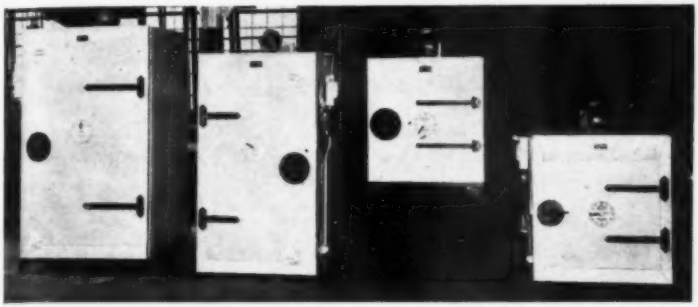


The new traffic line marker in operation.

The unit is ideal for one man operation; it will lay down a stripe from 2 to 6-in. in width at the rate of one to four miles per hour, depending on the condition of pavement or floor. It is equipped with a ¾-hp. gasoline engine and four pneumatic tires. A 12-gallon material pressure container keeps the spray gun supplied with material.

The operator has a clear view at all times of the old stripe or the guide lines laid down.—Binks Mfg. Co.

GKS—Standard Cabinet Ovens—A line of gas-fired ovens, deluxe gas-fired ovens, and deluxe electric ovens. These ovens are all available in the same sizes in which the company's standard electric ovens were manufactured. This means that any user can employ gas or electricity as a source of heat, and can have the deluxe oven, which includes additional safety equipment, or the customer can have the



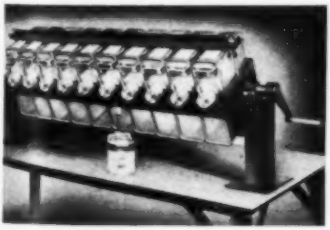
Larger and smaller ovens in the standard series; may be heated with gas or electricity.

basic unit if additional safety equipment is not required.

In addition to these ovens, the company also has available a high-temperature electric and high-temperature gas oven of the same size as those just mentioned. These ovens operate at any temperature between 100° and 1000°F., whereas the other ovens operate from 100° to 500° F.

The high temperature ovens have 6-in. of rockwool, which insures a minimum heat loss through the oven walls.—George Koch Sons.

New Color Key—An entirely new precision instrument for accurately measuring the mixing colors used in matching car finishes; is said to be the most exact method yet developed for measuring the amounts of lacquer or synthetic colors required to match practically any production or special color used as far back as 1935.



Color key and color matching machine.

Employing the principle of the interrupted light ray, the new device has a light-tube which fits into the mixing cup, and which instantly appears to go out when the exact amount of color is poured in. A vernier dial and control permits hair-line registrations of the tube, with the result that accuracy within 1/400th part of a formula is obtained. According to the manufacturer's engineers, those features make it possible to match tricky and peculiar shades perfectly—in any quantity from ½-pint to one gallon.

Used with the company's Color Meter, Sr., the Color Key makes accurate matches simpler and more positive than ever before possible. The Color Meter, which is designed especially for automotive paint jobbers, consists of an oscillating rack holding 20 mixing colors in lacquer and 20 mixing colors in synthetic, and which agitates them uniformly by a 1/3 h.p. electric motor. Patented fluid valves permit accurate dispensing of the colors, which are measured into mixing cups in the amounts called for by the formula book.

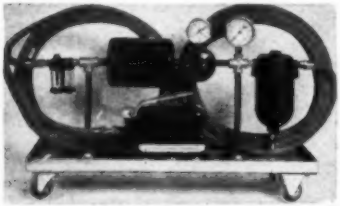
For small paint shops, the new Color Key is used with the Color Meter, Jr. The Junior machine agitates the mixing colors by hand power, but has the same valves and works with the Color Key in the same manner. Small paint shops can obtain the Color Key for use with quart-can agitators.—Sherwin-Williams Co.

To meet the demand for higher heat density ovens for infra-red baking, Thermalamps are available in ½ and 1-kilowatt sizes. These lamps, manufactured under license under Ford Motor Co. patents, are available in custom designed ovens of Underwriter approved construction.

At a recent demonstration, the high rate of heat transfer made possible with this equipment was claimed to shorten baking time and improve adhesion, durability and weather resistant qualities of synthetic enamel finishes. Improved energy control, glare elimination and reduced maintenance cost are said to be made possible with "sealed beam" construction.

Lens is of special glass for efficient heat transmission. Many new fields of application for electric heating are said to be opened up with this equipment for applying infra-red energy to industrial processes.—C. M. Hall Lamp Co.

Portable Unit with Pneumatic Sander-Rubber—This outfit is offered for use where it is desirable to have the air accessories for a pneumatic sander mounted on a portable tray which can be moved closer to where the work is being done. Accessories so mounted include hose, automatic lubricator, pulsation tank, air-pressure regulator and filter trap. The automatic lubricator provides uniform, automatic lubrication by the "vortex" principle. Oil is picked up by the eddy currents of the vortex where it is atomized and distributed in vapor form through the hose to the air motor. The capacity of the glass reservoir is sufficient for 40 or more hours of operation.



A convenient compact and useful outfit.

Vibrations set up from the sander exhaust have a tendency to travel to the pressure regulator. The pulsation tank breaks up vibration or pulsations and protects the regulator diaphragm from damage.

The air-pressure regulator is absolutely necessary for satisfactory operation. Main-line air pressures vary. The regulator permits adjustments to keep the pressure at 60-lbs. for economical, long-life operation. The regulator is equipped with replaceable diaphragms.

The filter trap filters out all water, oil and foreign matter, delivering clean dry air to the machine at all times. There is no filter screen or cartridge to replace. The portable tray is 16-in. wide, 24-in. long and 1½-in. deep.—Sterling Tool Products Co.

M. S. A. Dustfoe-Eyeshield Assembly and Comfo-Eyeshield Assembly—These units furnish approved respiratory protection against even invisible particles of harmful dust, and guard the wearer's eyes from flying dust and grit by a light, durable, transparent plastic shield, states the manufacturer.

The M. S. A. Eyeshield is designed to deflect small flying particles, and affords full, unobstructed vision. It is removable and replaceable and has a rubber-reinforced edge.

All the advantages of the popular Dustfoe Respirator are retained in the M. S. A. Dustfoe-Eyeshield Combination. The respirator is compact, permits unobstructed vision in every direction, and features U. S. Bureau of Mines - approved protection against harmful dusts, low breathing resistance, easy maintenance, soft sponge-

Protects workmen from certain hazards.

rubber face cushion, foolproof exhalation valve and protective filter cover. The "all-dusts" filter is quickly replaceable. Metal parts are aluminum.

In the M. S. A. Comfo Eyeshield Assembly, the wearer has the complete protection provided by the husky, long-time favorite Comfo Respirator. The unit is equipped with twin filters of unusually large area for low breathing resistance. The replaceable "all-dusts" filters are protected by metal covers, and the flexible rubber facepiece provides a comfortable fit on any face. U. S. Bureau of Mines-approved.

These compact new M. S. A. assemblies offer day-long wearing ease and safety to workers in dust-laden atmosphere, furnishing full respiratory safety plus durable eye protection.—Mine Safety Appliances Co.

Venetian Blind Coating Machine—Two sizes of machines for roller coating the slats of Venetian blinds are announced. The Junior Model takes slats only; the Senior Model is for slats, tilts and head rails.

Quoting from the company's brief specifications:

"All roller shafts are ¾-in. steel shafting. Transfer rollers are machined to exact size and polished to insure uniform flow of paint. Distributing rollers and painting rollers can be instantly adjusted to apply as little or as much paint as desired. Feed rollers are made of semi-hard rubber driven by chain drive, insuring exact synchronization with paint roller.

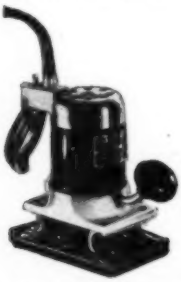
"The machine is driven by a 1/3-h.p. motor turning at 1725-r.p.m.; feeding magazine is either foot pedal

"Our aim is to keep our machines running all the time, within the highest degree of perfection."

or automatic; edge coater consists of a positive attachment for painting the edges at the same time as the sides.

"This machine will paint any width and length of slats, as well as any thickness of rails. The machine illustrated will paint any thickness up to 1¼-in. thick. It may be operated up to 250-ft. per minute, but the best results are obtained at speeds of between 85 to 125-ft. per minute. The edges are painted at the same time the sides are being painted."—Torres Venetian Blind Machinery Co.

Easy Electric Sander-Rubber—A 6½-lb. portable machine with convenient handles which enables the operator to present it to the work. The connecting electric cord plugs into any



Saves up to 80% over hand sanding.

electric light socket. It mechanically duplicates the back and forth motion of hand work.

The machine is used for smoothing surfaces to be finished, lightly sanding between coats, rubbing, buffing, polishing, "feather-edging" surfaces for repair finish jobs, removing old paint and rust, scuff sanding, etc. It has a rugged motor especially designed for low current consumption. All moving parts are mounted in ball bearings; drive mechanism is completely sealed in grease; has forced dust-filtered ventilation, molded rubber and cord fittings, accessible thumb switch, and a holder which takes one or several sheets of abrasive paper—Detroit Surfacing Machine Co.

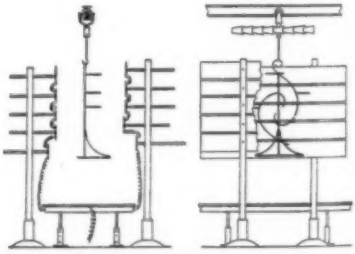
Paint Bead Remover—A system of automatically removing beads, tips, and fat edges that cling to low edges and corners of dipped products after the flow-down of excess paint or enamel has ceased. The system operates most satisfactory where the dipped products hang from an overhead conveyor.

At the proper point along the conveyor line—at a point where the flow-down of enamel has substantially ceased—the articles pass through a high-voltage electric field. As soon as they enter this electric field, any drops or fat edges that remain are immediately repelled from painted surfaces with such force that the excess paint flies out into the air in small thread-like sprays and stringy particles. The thin film of coating remains and levels out smoothly, leaving no trace of the beads or fat edges. The time required between dipping and the electric treatment depends entirely upon the design of the product and the characteristics of the enamel.

Electrical plates mounted on both sides of the conveyor line are electrically charged while the overhead monorail and metal parts hanging from it are grounded. The difference of potential between the articles hanging from the conveyor and the electrodes is usually 100,000 volts, direct current. An oil-immersed power pack is provided for creating the proper electric field. It requires less than 4-amperes at 220-volts in the primary, and is capable of giving from 72,000 to 126,000-volts in eight steps.

The amperage of the high-voltage electric current is so infinitesimal that a workman would not be electrocuted even though he did get in position to "take it."

The apparatus can be used to treat products of practically any shape and size—products or parts made of metal, wood, fiber or earthenware.—H. Ransburg Co.



Front and side elevation views of adjustable electrodes between and near which an electric field is provided. The purpose of this electric field is to remove clinging beads, tips, or heavy edges of enamel from dipped products, leaving no trace of same.

Air-Motored Agitators—A complete line of propeller-type air-motor-drive agitators for both open and closed type containers.

The No. 939 Series for open containers consists of two airplane-type propellers, one pitched right and the other pitched left, so that they "throw" toward each other, insuring more perfect mixture and the prevention of splashing.

Air motor operated; variable speeds.

These agitators, being driven by an air motor, are ideal for any liquids where there is an explosion hazard.

Shafts can be furnished from 12 to 27-in. long. Adjustable clamps enable the operator to fasten the agitator to the outside of a barrel or drum in any desired position.—Binks Mfg. Co.

LML Lacquer-Thinner Spatter Gun—Developed for and now used successfully by leading manufacturers to achieve Hammertone and Hammercraft finishes. After the base coat of the desired color is first applied with a high-production airbrush, a spatter coat of thinner over the wet surface of enamel is applied with the type LML Lacquer-Thinner Spatter Gun and a beautiful hammered effect is then readily and easily obtained. The product is then baked at medium heat for an hour, resulting in a lustrous metallic finish which is tough and durable. This special unit includes Thiokol-lined material hose, complete with screwtight swivel couplings, and a ¼-in. fluid valve.—Paasche Airbrush Co.

"The most outstanding increase in sales has been on automatic spraying equipment. Every indication at the present time is that this trend will continue, because of the constant demand for more speed."—Eclipse Air Brush Co.

Illustration shows an operator using a modern striping tool to stripe decorated wooden dishes. The dish being striped is mounted on a convenient turntable. It receives three stripes completely around the plate. Each stripe is of a different color which necessitates three different striping tools, one for each color. The operation is exceptionally fast.

Information and photograph, courtesy of Robin Hood Wood Products Co. and Beugler Mfg. Co., both of Los Angeles, Calif.

Wetordry Masking Tape—A new type of all-weather tape known as Scotch Wetordry Masking Tape. New features of this tape are as follows:

No Sweating: A uniform adhesive tackiness is maintained regardless of weather. Humid and damp weather conditions will not affect it.

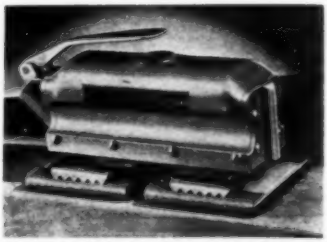
The package and a roll of tape.

Dead Stretch: A new feature which eliminates curl - back and gives smooth application to curves.

More Flexible: Makes easier application to curves.—The Minnesota Mining & Mfg. Co.

Sands, Rubs, Polishes—A new high-speed light-weight 2-pad rubbing machine, driven pneumatically. This machine is what the company calls the balanced operation. Workmen know "opposed pad" type, which means that the two pads reciprocate (move to and fro like hand sanding) in opposed directions to assure smoothly that freedom from vibration, in a machine of this type, is particularly important when working on vertical and rounded surfaces, and in sanding and rubbing very small parts.

This streamlined machine is small, light and vibrationless, therefore it is easy to operate with one hand. It weighs only 6-lbs. Its speed is suited to the type of work for which it is used—for such operations as sanding



Serrations in the easily gripped housing, and a new automatic feather-touch valve reduce fatigue and facilitate handling.

(smoothing surfaces with abrasive paper or cloth), rubbing and polishing in the cabinet room, paint shop and finishing department. In addition to its usefulness on flat areas, the machine can also be used over slightly curved surfaces, as well as on many small places usually reserved for hand work. Its performance assures speed, efficiency, safety and economy.—Sundstrand Machine Tool Co.

Whiz Electric Tool—An all-purpose electrically-driven tool weighing only 3½-lbs.; extension cord plugs in electric light socket. Made in one-speed and 2-speed models. The jaws of the

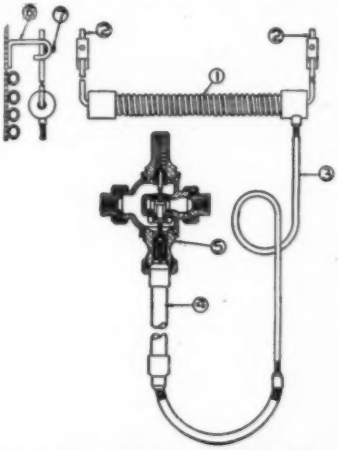
Has many uses in all departments.

chuck can be fitted with any one of several tools for cutting, drilling, grinding, wire-brushing, sanding, carving, polishing, buffing, etc. Small drum, spindle or disc sanders can be attached to the driving spindle. Some of its 1000 uses can be found in the smallest as well as the largest finishing room or paint shop.

The motor is triple geared and has ball-bearing thrust for smooth operation. A cooling fan prevents overheating; pistol-grip handle makes the tool easy to operate; die-cast alloy frame combines rugged strength with light weight.—Paramount Products Co.

Sarco Vapor-Line Control—Designed specifically to control the heating medium on degreasers which are used in metal manufacturing and finishing plants to clean metal parts preparatory to painting.

The parts are cleaned in trichlorethylene vapor or other solvent which is vaporized in the machine by gas or



Controls temperature of cleaning solution.

steam heat. It is the function of the new control to automatically maintain the correct vapor line regardless of variations in load and intermittent operaton.

According to the manufacturer, this saves solvent, prevents boiling over of the injurious vapors, and further, prevents the formation of rust in the degreaser. The regulator is self-contained and self-operated by the liquid expansion system in which this manufacturer specializes.

According to your plant layout, expert industrial engineers will design and supply equipment that will speed up and economize the travel of your products through the finishing department—and will start a wave of load-handling economies that will keep climbing higher as your products move along by power.

A novel feature is the sensative bulb or thermostat formed of heavy-wall - helically - corrugated tubing, braced on the inside. It exposes a large surface to the influence of the vapor in relation to its content, which results in rapid response to temperature changes.

Temperature adjustment is made by sliding the bulb up or down in brackets until a position is found for the vapor line in the tank, which maintains the correct boiling temperature (usually 175° F.). Available in sizes ½ to 2-in. for temperatures up to 400° F.—Sarco Co., Inc.

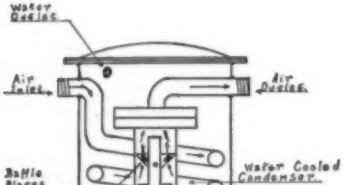
A combination cradle, tilter and dolly for making it easier and safer to tilt, elevate, move and hold in position filled and partly filled drums of finishing material.

The striping tool has been perfected to such an extent that it has been placed in service in most of the factories to be used for all of their striping. It lays a perfect line of practically any width, and can be used on nearly all kinds of work that has to be striped. It is much faster than the striping brush and has been improved so that it lays a clean clear-edge stripe on flat or curved surfaces. The modern striping tool is easy to operate and is a wonderful improvement over the old pencil brush. For different width stripes, you simply have a number of different width wheels, which can be readily interchanged.—L. A. VanArnam.

Aero-Dehydrator—Cools compressed air coming from compressor, condenses excess moisture in air and removes this moisture (along with any oil emulsion that may be present) before the compressed air enters the supply lines.

The cooling of the air and the refrigerating action reduces all the moisture and oil emulsion to a liquid which finds its way by gravity to the air trap mounted at the bottom of the Aero-Dehydrator. This works automatically and requires no attention, discharging the collected condensate at regular intervals into a sewer or drain. Compressed air leaves the dehydrator at a temperature where it is most dense, entirely free from moisture or oil emulsion, and in the best condition for spraying or operating any other tools.

The Aero-Dehydrator is capable of reducing the percentage of water in the air lines as much as 85% or 90%, using water as a coolant through the dehydrator—and even more with an electric water chilling attachment. The apparatus is made in several sizes having capacities ranging from 20-c.f.m. to 2000-c.f.m. It may be used as a precooler, an intermediate cooler or an after-cooler, depending on the results needed in the particular case.—M. & E. Mfg. Co.



It cools and cleans compressed air.

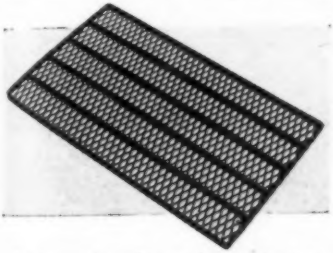
Flock Spray Gun—A high speed flock gun for manual operation—a gun identified as the Type FF ⅜-in. High Production Flock Gun. This gun is designed for rapid application of flock when supplied from a flock pressure tank or mechanical feed hopper. Body of gun is forged brass, nickel plated. It has aluminum alloy pistol-grip han-

Assures a continuous flow of material.

dle, with easily operated trigger. When double-action trigger is fully drawn back, a wide continuous stream of flock is delivered. A slight pull on the trigger releases a blast of clean air for blowing off excess flock.

It is light in weight and convenient to handle; will not clog; has ¼-in. standard pipe; can be equipped with specially designed nozzles for unusual operations.—Paasche Airbrush Co.

Non-Slip Flooring—Provides greater safety for workers while walking on cat walks, tank tops, bridges, galleries, and other similar structures. In places where workers are confined, such as in spray booths, the Safety "Non-Slip" Flooring assumes further utility. Its open design not only insures



Has several merits worth investigating.

better ventilation of air within the cubical where the man works, but also enhances his foot comfort while standing or walking. Its bridge-type construction can withstand an unusually heavy load and makes possible its adaptability to any size and shape of installation.—Industrial Sheet Metal Works.

Furniture Finish Dryers—A complete line of low-temperature wood-furniture finish dryers, operating at a controlled temperature of between 135° and 150°F., and with a controlled relative humidity of between 25% and 50%.

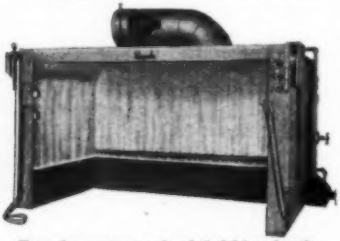
These dryers are normally heated by remotely-located steam coils, with the air being recirculated through the dryers and over the coils. They may, however, be heated by gas, oil or electricity where steam is not available in sufficient volume.

Finished work coming out of the dryer.

The furniture may be run through the dryers manually, on a gravity conveyor or by continuous conveyor, as is desired to best handle the company's particular requirements.—George Koch Sons.

Experience reveals three principal enemies of heat-processing with infra-red rays: 1) dirty and discolored reflectors, 2) spotty heating, 3) incorrectly focused lamps. To overcome them the C. M. Hall Lamp Co. designed its new Thermalamp as a quickly replaceable, easily cleanable unit having an exact pre-focus, an inbuilt lens with a hexagonal pattern for thorough heat distribution, and an inbuilt gold-plated reflector not exposed to dust and fumes. When they are correctly arranged in gangs or cluster, as in the Hall Master Oven, the lamps produce a uniform heat of 350° F. in one minute.

Water-Wash Air-finishing Booth—May be had with water wash for back, the sides, and at bottom. The water-wash below shelf is a particularly desirable feature when shelf-type water-wash booths are selected. The water-



Paasche water-wash airfinishing booth.

wash airfinishing booth includes panels, a wash chamber, settling pan, eliminator plates, non-clogging nozzles, removable strainer and float valve. The flow of water is four gallons per minute per foot of booth width, providing a good cleaning and washing operation.

These new type booths reduce fire hazards and effectively wash away all overspray by curtain of water. Solids are prevented from accumulating on rear and side-walls, ventilating fan and exhaust piping, and no solids or overspray are exhausted outside. These booths may be had in all types and sizes.—Paasche Airbrush Co.

Hydro-Filter Spray Booth—The year 1940 has seen the developing of an air supply unit and built to the same capacity as the spray booth and built as a part of it. This makes both the supply unit and the exhaust unit now part of the whole painting installation. In these confined quarters the air is distributed from this supply unit in close proximity to the sprayer by a series of adjustable louvres of special design, called "microfusers." These microfusers allow the supply air to be directed over the operator in any manner that the work demands.

The subject of humidity in painting has received increased attention and on a large installation this company's engineers have completely controlled both temperature and humidity of the air supplying the paint spray booths. This gives practically uniform conditions the year around in the paint spraying area. Spray booths this year were also illuminated with new fluorescent light set behind glass shields in the roof and sides of the paint spray booths.—R. C. Mahon Co.

Conveyor Finishing Kiln—Designed to shorten the time required in finishing—through the application of controlled drying to all types of stains, varnishes and finishes.

Water stain can be dried in 15 to 30 minutes; fillers in one to three hours; shellacs, sealers and lacquers in one hour; varnishes in one to four hours. It not only shortens the time required in finishing from 60 to 75%, but also reduces finishing room space from 33-1/3 to 50%, as compared with the time and space required for air drying.

Drying takes place in an insulated enclosure through which the furniture is pushed over a hard maple floor by a patented conveyor mechanism. Large pieces are pushed on their skids; smaller articles on specially designed trucks. A motor of ½ to 1-hp. furnishes power to operate the conveyor mechanism.

Specially designed pusher bars engage in the links of the chain and are dropped in place behind each unit as it enters the kiln, these bars being automatically disengaged when the unit has completed its travel, making it possible for one operator to attend to both ends of the conveyor.

These conveyor units are designed to handle, in a minimum amount of space, varying sized pieces of furniture. Due to the unique push-bar construction, all units can be handled with not over 3-in. between pieces, regardless of their size or shape. Small pieces can be double-decked on trucks so that a dozen dining room chairs occupy no more space than a pair of servers.

Temperatures of 118 to 125°F. have been found to be the most efficient and effective operating range for the kiln.

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Is yours a truly low-cost plant? Are you among the fortunate few who still can show comparatively favorable figures in your reports to stockholders? Low-cost handling of your products in process is a vital factor and will become more so. Experienced engineers can help you establish and maintain continuous savings with modern conveyor equipment.

This temperature range gives a constant relative humidity of about 20%, with a variation of possibly 2° either way. This amount of humidity works equally well with all types of standard finishing materials. If additional humidity is desired, an automatic humidifier is available. — The Irwin Equipment Co.

Gyro Electric Sander—For "feathering" spot jobs, removing paint, varnish, lacquer or rust, sanding bare surfaces, scuff sanding, sanding between coats, rubbing and polishing. The sanding pad assembly is resilient rubber, moulded in one piece. This

Useful for sanding, rubbing or polishing.

construction allows sanding of curved as well as flat surfaces. A special 4000-r.p.m. electric motor is connected to the sander head. All rotating parts are mounted in ball bearings. The operator's hand does not come in direct contact with the motor. A moulded bakelite hand grip is between the motor and sanding pad.

Though light weight and compact, the machine is ruggedly built for long and continuous service. It weighs 3½-lbs., is perfectly balanced and compact and shaped comfortably to fit the hand. No operator's pressure is required. Any make or type of abrasive paper may be used. A standard 9x11-in. sheet is cut into four equal pieces to fit the sanding pad. The paper is held in place by a special holder. Rubbing cloths or similar material can be attached in the same manner. Several abrasive sheets may be attached at one "loading". The motor is a universal type and will operate on either DC or AC.—Sterling Tool Products Co.

Finish Bake Ovens—Improvements in design, construction and economy of a line of ovens of various types for baking finish coatings include the following features:

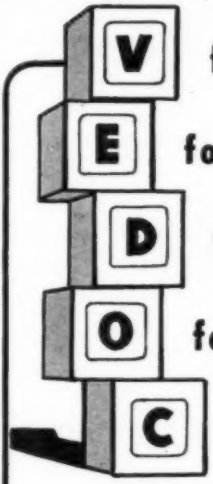
"Non-Thru" metal panels consisting of outer and inner panels with rockwool insulation; indirect gas-fired radiators; convected-air heat-distributing, circulating and recirculating system; "UniHySpeed" steam heater; open-coil external electric heaters; explosion latch (underwriter approved); direct oil-fired air heater; indirect oil or gas-fired air heater; direct-fired air heater with "controlled combustion" feature, and streamlined oven design.

Lift doors are furnished when required, which may be operated manually or by air or electricity. Heavy construction assures true and easy running of these doors in their guides. Automatic sealing is provided on lift doors as well as safety catch system in the event that cables or chains break.

On continuous conveyor ovens, heat seals of a suitable type are provided to reduce heat losses and fuel consumption. Considerable research has been done on the various types of seals, and a proper heat seal for practically any requirements can be assured.

"UniHySpeed" steam heating systems, with air-circulating fan and mo-

We Coined a New Word For SALES!



for VERSATILE

for ECONOMICAL

for DURABLE

for ORGANIC

for COATING

. . . it's the name of

FERRO'S new liquid plastic finishes

. . . developed to solve your problems!

VEDOC is Ferro's answer to a long-felt need for a superior organic finish—a finish which will up your sales because its actual performance is sure to please everyone. VEDOC produces a finish of enduring beauty, maximum durability and satisfactory field behavior. It is so designed that it can be used in the average production setup provided for the use of synthetic enamels. Application is by spraying or dipping and it is available in either white or black.

Write today for information about this newest FERRO FINISH.

HEADQUARTERS FOR COMPLETE EQUIPMENT, TOO!

Take advantage of Ferro's long experience in the finishing field. Let us supply all your needs. Inquire about our complete line of baking-ovens and driers. We custom-tailor each job to meet your particular requirements.

FERRO ENAMEL CORPORATION

CLEVELAND, OHIO

FEROC
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Vedoc FINISHES
LIQUID PLASTIC

tor equipment, are compact and easily located on or near the oven. These systems provide large volumes of clean fresh heated air for the ovens which bake and dry finishes quickly, assuring maximum beauty and attractiveness from materials used, and eliminating rejects.—Despatch Oven Co.

Portable Disc Sanders and Polishers—Three models of portable electric-driven machines are now available . . . useful for sanding metal or wood surfaces to be painted, and for buffing and polishing the final finish on a variety of surfaces and products. Features of the machines include the following:

The rotating parts are carefully balanced.

Motor—Universal type; operates on D.C. or A.C.; armature balanced to eliminate vibration; special compartment encloses the commutator and brushes so that no abrasive dust can reach them. A balanced fan on armature shaft gives adequate ventilation, assuring a cool running tool.

Body—Die-cast aluminum alloy.

Gears—Helical and spur gearing specially designed and accurately machined for maximum strength and quiet running; cut from finest steels and heat treated for long life.

Bearings—Every moving shaft is mounted on radial and thrust ball bearings.

Cord—Standard equipment includes 3-conductor rubber-insulated copper lead-in cord of convenient length, protected by a spring wire guard. It won't pull out. A ground connection, integral with cord, provides an absolute safety feature.

Pad diameters are 7-in.; no-load speed for sanding, 4200-r.p.m.; no-load speed for buffing and polishing (with lamb's-wool bonnet), 1300-r.p.m. Weights of different type models are 10½-lbs., 12½-lbs. and 14¾-lbs. respectively.—Skilsaw, Inc.

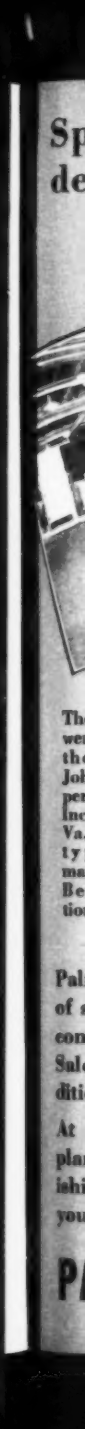
Small Metal Parts Washer—A new centrifugal that washes, rinses and dries small metal parts, all in one

Cleans metal parts to be finished.

The long trek of materials through your surface preparation, finishing and drying departments ends with the delivery of finished goods to freight car or road truck. But the profits you may have created by transporting products in process economically should keep accumulating as the job is repeated thousands of times.

Large cash savings in the cost of handling loads all through production are simply the total of such savings in each department.

That is why the conveyor people dwell so persistently upon the importance of stamping out waste in material and product-handling at each separate step from raw material to finished goods en route.



Speaking of latest improvements and developments in finishing equipment

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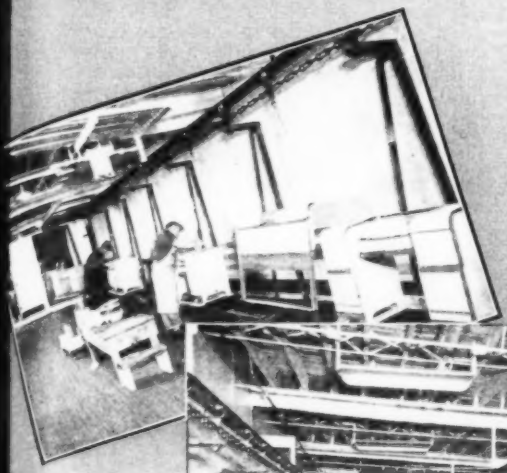


These pictures were taken in the plant of Johnson - Carper Furn. Co., Inc., Roanoke, Va., and are typical of many Palmer-Bee installations.

Palmer-Bee has planned, engineered, and conveyorized a number of such installations during the past year, in fact, this trend has become so important that we are now operating a plant at Winston-Salem, N. C. This plant is equipped to assemble and fabricate, in addition to warehousing a complete stock of material and parts.

At no cost to you one of our skilled engineers will analyze your plant and production, submit a plan and program through your finishing room—warehouse—cabinet room—machine room. Avail yourself of this service.

PALMER-BEE CO., DETROIT, MICH.

machine. Designed for use in machine shops and plating plants, the new centrifugal is called the "Centriforce" washer. As a detergent washer, the machine washes screw machine parts with hot detergent solution to remove oil, grease, dirt, or fine chips.

As a rinser, the work is spun in the centrifugal while a spray of hot water swirls through the parts. As a dryer (use of sawdust is eliminated), the machine is revolved at high speeds while blasts of hot air are forced through and around the parts. Up to 25 batches an hour are handled in the machine. — American Machine and Metals, Inc.

Infra-red Drying Lamps — A complete line of drying lamps, designed to produce a wealth of effective infra-red (heat rays) instead of light.

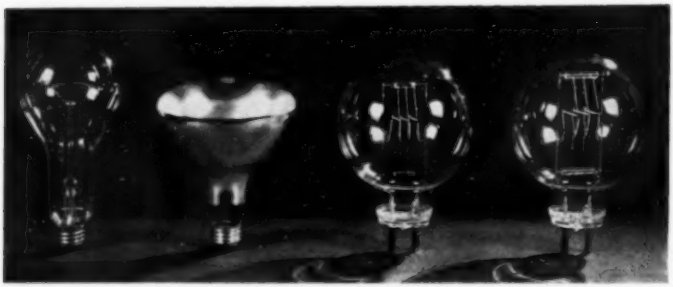
Most powerful of the four infra-red sources is a 1000-watt unit. Of medium intensity is the 500-watt unit. There are two 250-watt drying lamps: one requiring special reflector equipment, as do the 1000 and 500-watt lamps; the other having its own reflector "built into" the bulb.

Use of the new lamps in a wide range of trial installations clearly shows that heat from the lamps can be used to great advantage in a variety of industrial operations. Radiation from the drying lamp is of such a nature as to quickly dry and bake industrial finishes of many kinds. The new line permits users to speed up process drying, expedite surface heating, and to facilitate today's trend toward straight-line continuous-flow production.

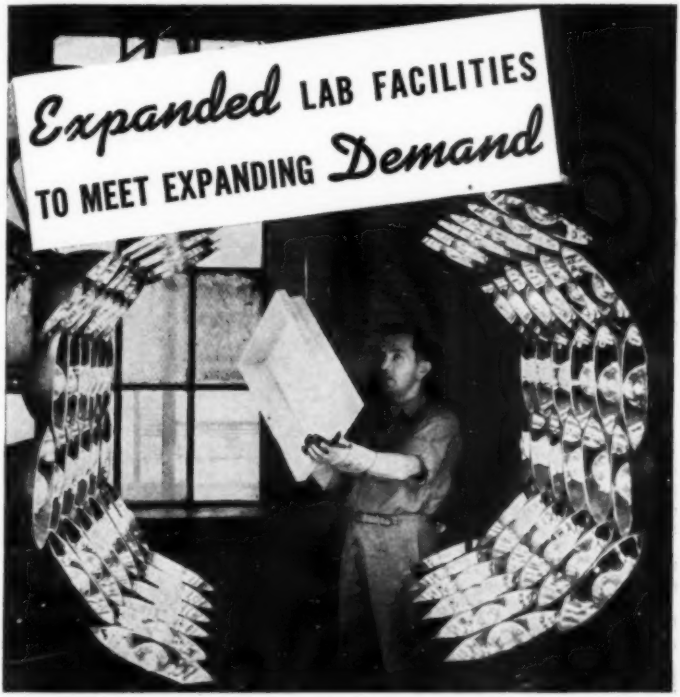
Owing to low heat losses, efficient directional control, light weight of equipment, minimum heat dissipation, compactness and flexibility, a drying set-up using the lamps permits new economies in this phase of industrial operation.

A tungsten filament, the basic element in the GE drying lamp, operates at a higher temperature than do the heating elements of other types of equipment commonly used for drying purposes. Infra-red radiation generated by the lamps consists largely of those heat waves known to penetrate objects most deeply before being absorbed. The lamps are designed to produce a maximum of infra-red radiation at the most effective drying wave length of infra-red consistent with economic lamp life. The average laboratory life of these lamps is in excess of 5000 hours.—General Electric Co.

Portable Light Infra-Red Ray Unit —The Nalco "13" Light Infra-Red Ray Unit for radiant energy baking, heating, drying and dehydrating will serve practical purposes for many drying installations. This portable unit is mounted on casters and can be easily moved into any desired position. It can be tilted at any angle and may be swung over into a vertical position as well as used horizontally. The unit can be raised to a height well over



New GE drying lamps; average laboratory life exceeds 5000 hours (208 24-hour days).



INFRA-RED FINISHES must be "tailored" to each application. Shape and size of article must be considered — also kind and gauge of metal. Panel testing is not enough.

Proper formula development demands laboratory equipment large enough to handle actual product. Berry Brothers equipment is a production-size unit. Berry Brothers Laboratories have solved many varied and difficult Infra-Red drying finishing problems. Berry Brothers *Infrabake* Finishes are available in Enamels, Rufkast, Hammered Metal and Multiform — a complete line of proven materials — with converting time as short as three minutes.

Let us help you on your finishing problems.

BERRY BROTHERS

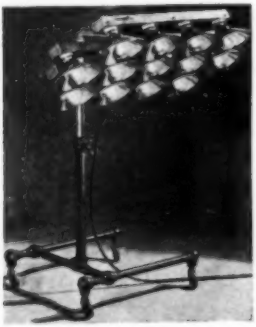
Industrial Varnishes • Enamels • Lacquers

DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

JERSEY CITY • BOSTON • CINCINNATI • CHICAGO • ST. LOUIS

8-ft., or it can be dropped to within 12-in. of the floor.

This unit is sufficiently large to dry a surface approximately 4x6-ft., either greater or less, depending upon the distance it is placed from the surface



New 13-lamp portable infra-red unit.

or products to be dried. For example, two of these units, properly placed, will give complete coverage to both sides of the front or back of an automobile—or a complete side.

Switches are mounted on each row of lamps so that a combination of 4 or 9 or 13 lamps, depending upon the area to be covered, may be used. Standard equipment of the Nalco "13" Lamp Portable Unit includes 15-ft. of the approved cord and plug, thirteen 7⅝-in. polished aluminum reflectors and thirteen 260-watt, G-25 Nalco dritherm carbon-filament lamps.—North American Electric Lamp Co.

Style trends in finishing—Today's most popular finish for many different kinds of products is "Hammertone," a finish that simulates hammered metal work, but is perfectly smooth and easily kept clean. The natural irregularities of rough metal surfaces enhance the Hammertone effect, so that polishing the metal surface before applying the finish is not required.—Maas & Waldstein Co.

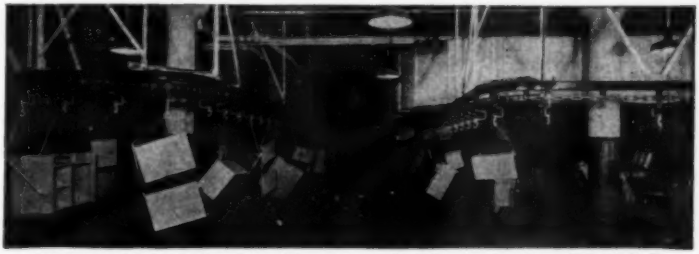
Illustration shows one 4-lamp reflector unit mounted on the portable pedestal.

Portable Baking Lamp Unit—A portable baking lamp designed primarily for baking or quickly drying high-heat enamels and touch-up repair pobs.

As shown in Fig. 1, a 1000-watt assembly (four 250-watt R-40 reflector drying bulbs) is mounted on an adjustable horizontal arm supported by a tall slender pedestal which is fastened rigidly to an X-frame base that has four ball-bearing casters. The horizontal bar is adjustable vertically from a point close to the floor to as high as 6-ft. above the floor. The 4-lamp reflector can be tilted on the bar to any possible angle required.

From one to six of these 1000-watt units can be mounted on a single vertical pedestal as shown in Fig. 2. Each unit is supplied with a 12-ft. cord and plug, with switch control placed in the rear of the housing. Units are available from stock, wired for 110-120-volts and 220-240-volts.

The portable unit, fitted with one



Kitchen cabinets—all sizes, all types—finished with Kem Appliance white, on conveyor leading to spray booth and coming from oven. Schedule: 280° F. and up, for 30 to 52 min. depending on output desired.

"For Lower-cost Finishing, USE HIGHER-GRADE MATERIALS!"

THAT might well be a motto tacked on the spick-and-span finishing department walls of the Murray Corporation, famous Detroit auto-parts manufacturers who turned to making kitchen cabinets a year ago to level out a fluctuating production curve.

For Murray permit nothing but highest grade materials to enter the shop—despite the fact that low unit costs were vital. The finest type of conveyors and ovens were installed, together with air-conditioned, water-wash spray-booths. And, nothing but top-grade Kem Appliance Whites and Kem primers went into the paint circulating system.

The result? Lower unit costs than with many cheaper enamels, a reject rate of a fraction of 1%, and a finish that more than meets the unusually high standards set by the distributor! It's a perfect confirmation of the old adage: The Best is Cheapest in the Long Run.

Sherwin-Williams engineers and Kem Appliance Finishes may be able to help you as they helped Murray. Calling in a S-W representative costs nothing, incurs no obligation, may save you thousands of dollars. Write or call The Sherwin-Williams Company, Cleveland, Ohio, or the office nearest you.

Murray's air-conditioned, water wash spray-booth.

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

COVER THE EARTH

According to Mr. Paul M. Goodell, Manager of the Radiant Heat Division of the C. M. Hall Lamp Co., the Thermalamp is a new type of sealed-beam infra-red source developed to meet practical industrial heating conditions. It consists of a special Mazda-made source of 1000 watts, mounted in a 24-karat gold reflector, with lens for heat distribution control and glare elimination.

Ovens are custom-designed to meet specific requirements and results are guaranteed. Pre-wired channels, with Thermalamps properly spaced, are easily mounted on ordinary pipe framework to form an oven of any dimension. Ovens may be designed for mounting overhead, in the conveyor line, or in vertical sections.

Thermalamps have a sealed-beam device, therefore it is only necessary to occasionally wipe the lens instead of repeatedly cleaning the open reflectors and lamps.

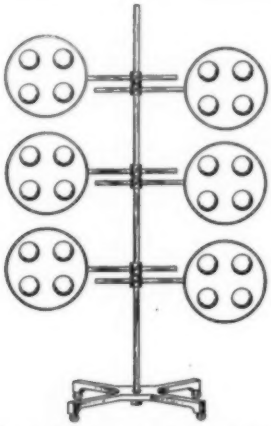


Fig. 2—As many as six 4-lamp reflectors can be placed on the one portable stand and adjusted to any position desired for the spot baking of a freshly repaired finish.

or several reflector lamp units, is convenient for baking spot repair finishes on automobile bodies, metal cabinets of all kinds and various other types of work having either smooth or wrinkle enamel finishes.—Op-Al Electric & Mfg. Co.

Protective Unit for Baking Lamps—The Protecto-Ray Unit is a completely enclosed polished aluminum housing with removable doors of heat-resisting glass for enclosing and protecting infra-red ray baking lamps. This unit is designed particularly for use in locations where dust, paint fumes, oil, etc., are likely to collect on the reflectors.

Covers and protects lamp and reflector.

A feature of this unit is the removable glass doors which allow the removal and replacement of heaters without causing costly production delays. This unit will do a heating, baking, enameling or drying job as efficiently as any open unit.

The accompanying illustration shows two reflectors in a section of five. Each reflector is 10¼-in. in diameter and is equipped with a 375-watt heater. Fuses are built in the casing that houses the electrical connections. Standard section includes five reflectors, complete ready to plug in for immediate operation. Units can be built to the user's particular requirements.—Infra-Red-Ray Devices, Inc.

Adjustable Infra-Red Bank Assemblies—These infra-red bank assemblies are especially designed for establishments that have limited floor space. They may be had in various lengths and widths to meet a large number of special baking requirements.

Adjustment to all angles is obtained through means of cross slide blocks and thumb screws. When used as portable units in a horizontal position, two bases and uprights are required. When operated in a vertical position, from one to six lamp banks can be handled from a single base and upright.

Standard length of unit banks available from stock are 4-ft. long, rated at 1500-watts, and 8-ft. long, rated at 3000-watts. Banks are wired complete, ready to connect to 110 or 220-volt circuits, as specified.

Due to the extreme flexibility and ease of adjustment these infra-red assemblies are especially useful to plants having to contend with a multiplicity of baking operations.—Op-Al Electric & Mfg. Co.

In this set-up, banks of lamps are positioned to make the heat "flow" from three directions.

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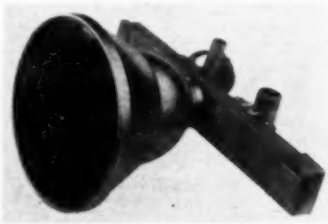
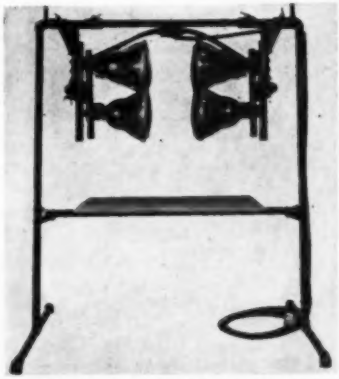
Elizabeth, New Jersey

Infra-Red Lamp — Thermalamp; a sealed-beam infra-red lamp for drying and baking; features even heat distribution and low maintenance. Its lens of a special green glass, which is

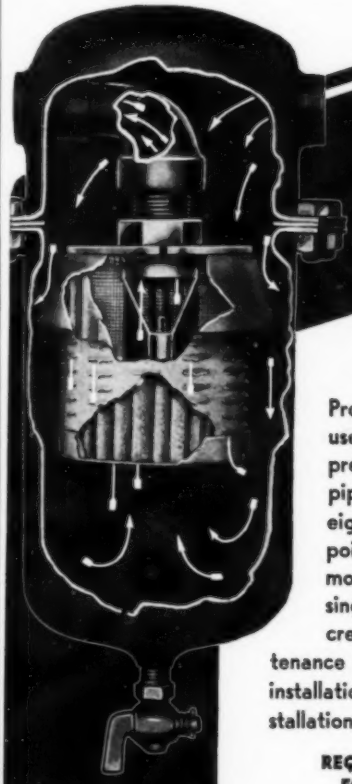


Single sealed-beam Thermalamp for drying.

said to have high heat transmission qualities while retarding passage of visible light, serves the dual purpose of providing hexagonal pattern of even heat distribution and sealing 1,000-watt lamp and gold-plated reflector from fumes and dirt. In cleaning, the maintenance man has only to clean outside of lens. A specially designed socket locks into the pre-wired channel which mounts on ordinary pipe framework to form oven of any dimension. Ovens are custom-designed for each installation.—C. M. Hall Lamp Co.



A 10-kilowatt portable laboratory unit for doing experimental infra-red baking.



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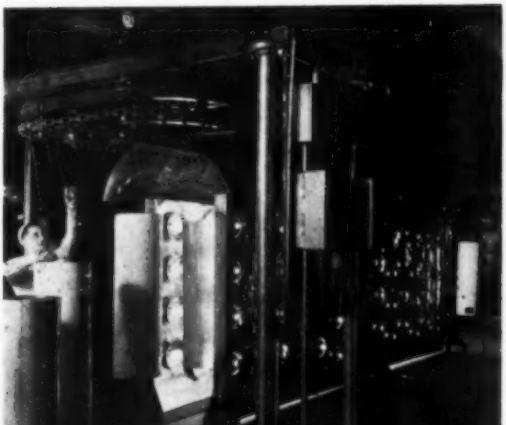
Baking Industrial Finishes



Baking the finish on sheet-metal cylinders which are shells for hot-water heaters. Photograph, courtesy Ault & Wiborg Corp.

IF WE SAY "INFRA-RED" to the average person, his thoughts turn immediately to the therapeutic heat lamps with which nearly everyone is now familiar. But to industry, "infra-red" has a new and important meaning. Infra-red radiation is being used more and more as a heat source for baking industrial finishes, inks and other materials.

Some of the products which already are being finished with infra-red baking materials include oil-burner units, oil-burner panels, water heaters, automobile instrument boards, stove parts, cash registers, filing cabinets, lipstick shells, auto heaters, beverage coolers, metal index tabs, steel barrels, kitchen waste cans, thermos jugs, washing machines and silk-screen lettering on metal. The finishes include smooth coatings, wrinkles, hammered effects and graining.

How Infra-Red Operates

Infra-red radiation does not owe its baking powers to any mysterious inner forces or to any factors peculiar to these spectral rays. Infra-red rays bake because when these rays strike many types of objects they are converted into heat. Some materials will transmit these rays without converting them into heat. For example, infra-red rays will pass through air without heating the air to any appreciable extent. On the other hand, the

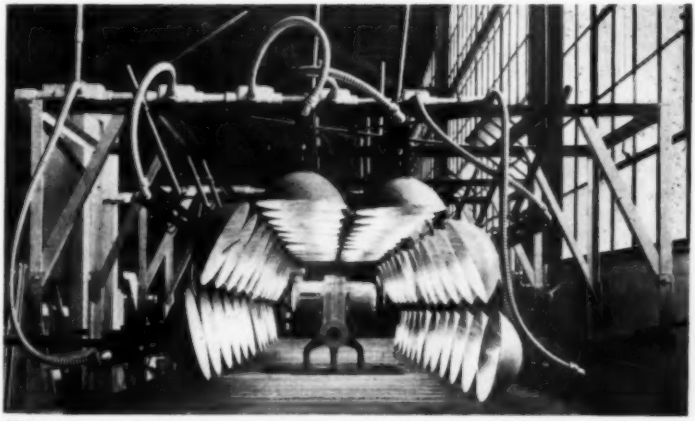
with Infra-Red Radiation

BY M. M. WILSON
Ault & Wiborg Corporation

How infra-red radiation from electric lamps, with proper reflectors, operates; how and under what conditions it can be utilized to bake certain finishes on metal surfaces; what happens if or when too much heat is applied; and the effect of space, colors, materials, surfaces and air currents on final results.

infra-red rays are stopped by a very thin layer of water; while other materials, such as gold or highly polished silver, will reflect almost all of the infra-red rays and will not absorb nor transmit any great amount of them. It is this heat that bakes the finishes, in the same way that hot air in baking ovens bakes the finishes.

Air is one of the very best heat insulators. It is only the thin layer of air right next to the object being baked that heats the object. The bulk of air in hot-air ovens has to be kept in motion. Otherwise, the object would not quickly absorb the heat. As soon as one layer of air has given up its heat, it has to be removed and another layer is brought in contact with the article being force-dried in order to, in turn, give up its heat and aid in baking the finish. In the case of



Oil-burner units, passing through infra-red tunnel. Photo, courtesy Ault & Wiborg Corp.

infra-red rays, they pass directly into the object and if the object is of an absorbent nature, the infra-red rays are immediately converted into heat.

Effects of Colors and Surfaces; Polished Metal; Thin Metal

In general, dark colors absorb the rays more easily than light colors; light colors tend to reflect the rays. Considerable data has been presented showing the difference in absorption by these various colors. This is of theoretical interest, but is of no practical interest to the foreman in charge of the finishing department. Such a foreman cannot be expected to change the conditions in his infra-red apparatus every time he changes color or changes paint.

It is up to the paint manufacturer to design his finishing material so that all colors will bake under identical conditions of radiation. The paint manufacturer has always done this in the past in the case of hot-air ovens. If the paint manufacturer knew that his customer had an oven that called for a baking schedule of one hour at 275°F., he designed that customer's paints—red, green, blue, black, or what not—so that they would bake under these conditions. The manufacturer has to do the same thing when he supplies materials to be baked in infra-red tunnels.

In the case of infra-red radiation, it is interesting to note that black creates an acceleration of drying. Black tends to absorb more of such radiation than do any other colors and thus tends to bake more quickly.

Polished sheet steel will reflect more infra-red rays than unpolished steel. Aluminum will reflect more than polished steel. Thus, it will take an even longer time to bake finishes on aluminum than it will on polished steel, and a finish on unpolished steel will bake the most quickly of all.

So far, most of the baking by infra-red radiation has been on metal. Finishes on thin sheets bake out more quickly than do the finishes on heavy metal parts. On heavy metal parts, the heat is conducted away from the surface through the body of the metal so that the finish does not reach baking temperatures nearly as quickly as it does on thin parts.

What Happens When Too Much Heat Is Applied

It is understandable that the more radiant energy you pile into a surface, the more quickly is the part heated to a given temperature. Another way of saying this is that the more closely the lights are packed in an oven, and the higher the wattage of those lights, the easier it is to quickly obtain a given temperature. The paint itself is the principal limiting factor in the amount of radiant energy that can be applied to a surface and do a satisfactory job.

It is entirely possible to put so much energy into a paint film that the surface of the paint will be dried to a tough hard film before the under part of the coating is even free of its volatile solvents. These solvents will then vaporize under the surface of the film and cause a blistered honeycombed effect which does not show on the surface. This film will eventually bake out hard, but when it is carefully examined the cellular substructure can be easily noted.

Another instance where too much radiant energy can be applied to a paint film is in the case of wrinkle enamels. A wrinkle enamel wrinkles because the skin dries while

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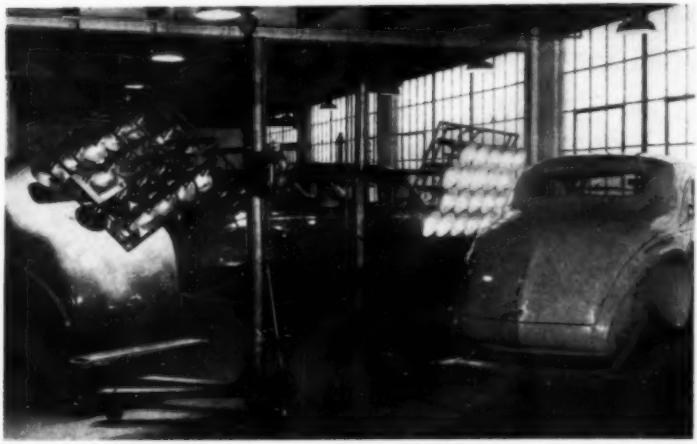

Spot baking repair finish jobs on automobile bodies, using portable adjustable units.

the under surface is still soft enough to permit the dry skin surface to creep and crawl. If radiant energy is applied too quickly, the entire film will set up before this creeping and crawling has been effected. It is possible to design wrinkle enamels so they will wrinkle almost instantly, but such enamels do not generally have sufficient stability on storage to be satisfactory from a practical standpoint. When these enamels are stored for any length of time in their original containers, they tend to skin over or even actually gel in the container.

Distance From Lamps; Air Currents Created

Because air has very little absorption for infra-red rays, theoretically it should be just as easy to bake an object 60-in. from the lights as it would be to bake it 6-in. from the lights. But this is not true for two reasons. First, none of these sources of infra-red radiation send out rays which are perfectly parallel and even in their distribution. There is always some point in these lights, or bank of lights, at which the temperature conditions and distribution of energy are most efficient for baking operations.

Another factor that enters into baking under infra-red lights is air current. As the object heats up, air currents are bound to be created around it. These air currents cool the painted metal surface and overcome the effectiveness of the infra-red rays pouring into it. A paper was recently presented at the Cincinnati meeting of the A. I. E. E. by Mr. Paul Goodell of the C. M. Hall Lamp Co., in which he pointed out very clearly, from both a mathematical and a practical standpoint, that these convection losses and re-radiation losses could seriously affect the baking efficiency of an infra-red oven. In general, an infra-red oven should be just as small as possible

for the work being handled and should be enclosed as much as practical to avoid convection losses.

When to Use Infra-Red

There are certain technical limitations in the use of infra-red for baking finishing materials. Heavy parts do not bake as quickly nor as easily as thin parts. For this reason, in the baking of miscellaneous articles that have both light and heavy portions, it is difficult to get a proper bake on the heavy parts without over-baking the finish on the thin parts. It is also difficult to bake hidden parts of objects. Infra-red rays have to strike directly on at least one side of the painted metal surface which is to be baked. In metal objects, conduction will take care of hidden parts to a certain extent, but in non-metallic objects, conduction can not be counted on to do this work.

An infra-red conveyor tunnel set up for baking synthetic enamel on range parts. Photo, courtesy Fostoria Pressed Steel Co.

There are certain limitations due to the reflection and absorption characteristics of materials being baked, and occasionally the baking of a finish under infra-red is entirely different from the baking of the same finish in a hot-air oven. Generally, the baking time under infra-red radiation is less for a given specified temperature than the time required in a hot-air oven. This is partly because the heat can be delivered to a surface so much more quickly by radiation than by convection and conduction of hot air, and partly because the paint manufacturer has used special formulations for materials to be handled under infra-red.

Cost of Infra-Red System; Conveyor Oven Advisable

There will also be a cost limitation on infra-red in certain locations and on certain jobs. Reasonably accurate comparisons can be made only after investigation into all factors and conditions that enter into the picture. Usually, more favorable conditions for infra-red baking are found where a continuous conveyor installation is to be included. Where a manufacturer is using a batch-type oven for baking miscellaneous parts, the installation cost of an infra-red oven would be comparatively great.

After an infra-red oven is installed the cost of its operation,

Officially approved* for complete respiratory protection against paint-spray vapors and pigments. Uses air from regular compressed air line. Lightweight, comfortable, permits full working freedom—features Navy-type facepiece, bump-proof air flow valve, double exhalation valves, quick-release connection. Send for Bulletin No. CS-7.

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compared with the cost of the operation of a hot air oven which would handle the same amount of work, varies directly with the cost of the electricity.

In almost all cases, a conveyor type oven is advisable for use in infra-red baking. These infra-red lamps are spot sources of energy and tend to give spotty baking on objects that are held at one fixed position under the lights during the baking. On a conveyor, the objects to be baked pass by all of the lights and pass through one zone of spottiness to another zone of spottiness, so that in a length of 8 to 12-ft. the entire surface of the object receives about the same amount of radiation.

Batch-type infra-red ovens are being used successfully in some special cases, but in each case only a single type and shape of objects is being baked. When this is possible, an infra-red oven can be designed to give approximately uniform distribution of energy over the surface of that particular object.

Finishes Available for Infra-Red Baking

Satisfactory finishes consisting of primers, surfacers and finishing coats are available at the present time for baking under infra-red lights. Work on infra-red finishes is constantly in progress, and new products for this type of work appear at frequent intervals.

Manufacturers supplying infra-red equipment are constantly changing and improving their designs to suit requirements which become evident as this art is developed. If the paint manufacturer says he needs certain energy concentrations and certain evenness of distribution and a certain baking time, the equipment manufacturer

will strive to meet these demands. Future developments will result from research by both paint and equipment manufacturers. And, of course, the utility companies hold an important key to the broader use of infra-red. If and when electric rates go down, an expansion in this method of baking finishes is likely to follow.

Considerable discussion has been heard regarding the explosion in infra-red ovens, especially if some accident should occur that would break one of the lamps. If one pauses long enough to actually calculate the percentage of solvent vapor which it is possible to have in an infra-red oven at any one time, it is seen that the explosion hazard is totally absent. If the infra-red oven is located several feet from the spray booth, the danger of the hot lamps in the oven causing an explosion is not nearly as great as the danger of steel trucks with steel wheels around steel equipment, and very frequently on steel floors, causing sparks which would be very dangerous if explosive conditions existed.

Polyvinyl Acetate Bulletin

Facts concerning polyvinyl acetates, the thermoplastic resins produced by the Du Pont Co., are contained in a technical bulletin just issued by The R. & H. Chemicals Department of that company. Information concerning different grades and specific applications is given. The bulletin also contains a discussion of the uses of polyvinyl acetates in various industries. Copies may be had on application to The R. & H. Chemicals Department of E. I. du Pont de Nemours & Co., Wilmington, Del.

Infra-Red Drying Information

Facts, figures, prices and illustrations of infra-red equipment, with pictures of various applications, are included in several folders and booklets available for distribution by the North American Electric Lamp Co., 1014 Tyler St., Saint Louis, Mo.

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Rubbing Fiber Surface

We are making laminated material having a paper stock base and a phenolic-resin surface. We are interested in a rubbed finish for this material and would appreciate it if you could suggest some book or publication which would give us some pointers. We are somewhat familiar with the equipment and the methods of finishing furniture and woodwork by rubbing, but are quite sure there will be a number of differences in handling this material.

We are sending you a small sample, scrap piece, which will serve to show the character of the material.—A. C. Co. (Tight Wood Barrels and Kegs).

We are wondering if you have in mind actually rubbing the surface to produce this effect, as is customarily done in high-class furniture and piano finishing? If so, there are various mechanical rubbing machines, including the large stationary "stroke" machines for large flat work; also various small portable machines—some driven by compressed air; others by electric current.

In connection with this work, you can use fine abrasive paper or abrasive cloth with a "sanding liquid", or you may use hard felt pads, pumice stone and oil or water, or a rubbing compound.

We presume that you know there are some finishing materials manufactured which, after having been applied and become dry, give the appearance of a rubbed finish. These are usually called flat varnishes or flat lacquers, and are used to some extent in the manufacture of low-priced furniture, where the rubbed effect is desired but where the selling price is so low that actual rubbing of the surface would be too costly.

In past issues of INDUSTRIAL FINISHING we have published some articles about rubbing finishes, and if you desire to read some of these we will endeavor to find tear sheets of same and send them to you. —ED.

Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

Spray Painting

We have been asked by one of our Overseas' Friends to obtain for them any books on the latest up-to-date methods of spray painting. We have written the DeVilbiss Co. and the Binks Mfg. Co., asking them if they have any such information available, but thought that you might be acquainted with some other possible sources of supply.

We would not be adverse to purchasing any up-to-date books that may have been published upon this subject and would appreciate learning where such information can be obtained.—S. D. Co.

All of the various finishing books we have or know about (except one recently published by the DeVilbiss Co.) discuss spray finishing only incidentally. Of course, we

have published several excellent articles on this subject in past issues of INDUSTRIAL FINISHING Magazine.—EDITOR.

What Paint Changes Color by Heat?

We are endeavoring to locate a source of supply for a special paint. This paint, when applied to a metal surface and brought to a slow heat, changes in color in proportion to the heat applied. In other words, a visible difference in color designates the temperature to which the part was subjected. Our application would be to experiment by painting our aircooled aircraft cylinder heads and barrels and, after a run, ascertain hot spots or temperature generated by combustion on any given portion of the head or barrel.

We would greatly appreciate any data or information which you may be able to furnish us. We thank you in advance for your cooperation and early attention to this matter.—X. Y. Co. (Aircraft Engines).

Although I have never heard of such a material, your letter hardly gives me enough to work on. Such a material could be formulated, as I have already talked to two formulators about it, but you do not give any approximate temperatures.—C. O. JUDD, Chief Chemist.

I have never heard of a coating for such a purpose. Any one of a number of formulas could be made to serve such a make-shift purpose, but I will not even attempt to make any recommendation, for the following reasons:

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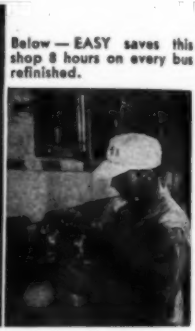

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1) There would have to be rigid tests for uniform solution composition (made by the user).

2) Any coating would alter the temperature in any one of several or more ways.

3) If there is a coating for the unit for regular use, then the test coating would have to be applied over that to be of value—and such value would be nullified by chemical reactions by and between the two coatings.

4) To get an accurate test, the coatings would have to be applied to a certain exact thickness all over the part and kept to the same thickness at all times. Such a procedure is practically impossible.

Since what you wish to accomplish can be had to the Nth degree, with minimum effort and expense by use of a recording thermometer or a spectroscope, I am not going to "stick my neck out" by offering the slightest encouragement for the paint idea.

Still another decided reason should prohibit such use. Take any ten persons; show them any color, and you will almost invariably get from 8 to 10 different answers. Further, a color in one location is entirely different in another location, the same being due to light reflection. Sorry, but I believe the truth is the best for all in the long run.—H. H. HIGERT.

Scientific Section Circular No.

221, December 1924, described the heat-indicating pigment, Copper Mercury Iodide, which changes from red to black at temperatures of approximately 160° F. However, this color change of the pigment is reversible and the red color reappears when the temperature goes down.

I presume you want non-reversible color changes. We have had several inquiries regarding them.—National Paint, Varnish & Lacquer Ass'n.

A. J. Steudel Elected President of Sherwin-Williams Co.

The Sherwin-Williams Co. announces the election of Arthur W. Steudel as President, succeeding George A. Martin who becomes Chairman of the Board effective immediately. Both men have long records with the company and both have worked from humble beginnings to the top in the largest paint manufacturing organization in the world.

Mr. Steudel has been Vice President and General Manager, and now becomes the fourth President in the 74 years existence of the company. The new President at 48 is admirably fitted for his responsibilities, having served in various operating, selling and administrative capacities in the paint, varnish, lacquer, chemical and insecticide divisions of the company. Mr. Steudel was born in Cleveland in 1892.

Mr. Martin becomes Chairman of the Board and Chief Executive Officer of the company with appropriate powers and duties. Mr. Martin is one of Cleveland's best known figures and a Director of several corporations including Goodyear, Wilson & Co. and the Cleveland Baseball Company.

Prof. E. E. Ware who has been Technical Adviser to the President becomes Vice President and Technical Director. Mr. L. H. Schroeder, Treasurer of Sherwin-Williams, was elected to the Directorate.

In 1940 Sherwin-Williams reached an all-time high of over $100,000,000 in volume of sales.

WHITE
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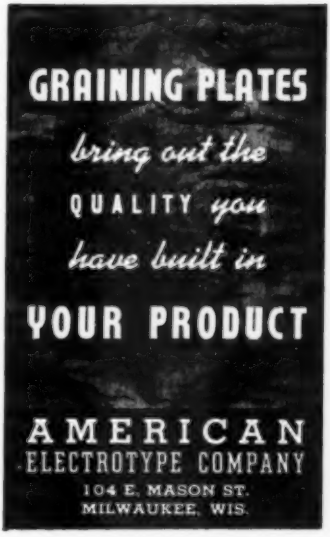
S. G. No. 4150 means Gloss White Synthetic that bakes WHITE and stays WHITE . . tough, durable enamel that will not mar . . the new Randolph development that will enhance your product.
Prove it! A sample of S. G. No. 4150 will gladly be sent on request.
Dopes—Thinners
Lacquers—Synthetics
RANDOLPH
FINISHING PRODUCTS CO.
Carlstadt New Jersey



TRY SUPER - KAMEX

Dries Like Lacquer—
Builds Like Varnish

Cabinet and furniture finishers find Super-Kamex is just what they have always wanted—a new and improved finish with the **best features** of varnish and lacquer without the faults of either. Has twice the solid content of lacquer and dries as quickly. Can be sanded or polished within an hour. Waterproof, alcohol and alkali resistant. Best results with spray but brushes well if thinned with 5% to 10% turpentine. Non-lifting—can be applied to any surface. One coat of SUPER-KAMEX equivalent to two of of clear patented lacquer. An ideal product for furniture finishing and refinishing. Comes in clear gloss, semi-gloss and flat. FREE—Send today for liberal SAMPLE and visual proof panel which shows comparative results. Also finishing booklet and price list free on request.

YOU CAN COUNT ON CAMPBELL

M. S. CAMPBELL Company

"Fine Finish Leadership for 25 Years"

706 EAST 19TH ST. KANSAS CITY, MO.

Weight of Air Pressure

on a surface being sprayed, if excessive, is sufficient to cause stipple or orange peel—especially as it is invariably combined with a chilling effect. Costly sanding and rubbing may eliminate the effects on some types of finishes, but on synthetics the damage cannot be repaired.

It Is Wasteful . . .

to use expensive thinners to lengthen flow in an attempt to overcome uneven finishes caused by excessive pressures.

Investigate . . .

Eclipse Low Pressure Spray Equipment. Send for Catalog No. 77 today.

Eclipse Air Brush Co.
Incorporated
392 PARK AVE. NEWARK, N. J.

Mastic Cement

Please advise us of the correct ingredients for making mastic cement, used in applying metal tile to plastered walls. We have tried several which do not work properly.—T. J.

It would seem to us that you would find it more satisfactory to purchase a material that is already manufactured for this purpose. There are a number of concerns who make material of this kind and we should think that you would be able to obtain several diffent brands of material right there in your city (Chicago). However, if you prefer to obtain the product from some other locality, we are pleased to suggest other manufacturers of mastic cement—this information going forward to you by letter.—ED.

To Clean Stencils

Can you recommend a product that we could use for washing copper stencils on which there is a coating of lacquer enamel? We use these stencils in finishing our celluloid toys. If you know of any concerns that make a specialty of chemicals for this purpose we would like to have their names.—A. NOVELTY CO.

We suggest a low-priced lacquer thinner for this work. You can probably purchase this locally or from the concern that supplies you with finishing materials. Of course, the evaporating rate is high, therefore this material would need to be kept in a closed container except when in use.—ED.

Send for working samples

try to scratch or mar it!

Here is a lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies—a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods . . . It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for first coat.

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky

WORLD'S GREATEST all around ELECTRIC TOOL

DRILLS—GRINDS—SANDS—SAWS
POLISHES — SHARPENS — CARVES

The new WHIZ ELECTRIC TOOL is the handiest power tool ever made. A rugged tool for power and precision work. Drills thru 1/4 inch iron plate in 42 seconds or engraves intricate designs. Handles any material: Metals—Woods—Alloys—Plastics—Glass—etc. Saves time. Eliminates labor. Plug into any socket AC or DC, 110 volts. Chuck 1/4 inch capacity. Ball bearing thrust. Powerful, triple-geared motor. STANDARD MODEL with Normal Speed (uses 200 accessories, instantly interchangeable.) Price only $7.95.

The only DRILL TOOL with a full year guarantee.

FREE—Accessory outfit (Value $2) includes set of drills, mounted 1 1/2 inch grinder, sanding discs, cutting wheels, mounted brush, polishing wheel, carving burr, etc. FREE with each Tool ordered NOW. We pay postage.

10-DAY TRIAL—MONEY BACK GUARANTEE

PARAMOUNT PRODUCTS CO.

Dept. 2 FM **545 Fifth Ave.** **NEW YORK, N. Y.**

Bake Finishing Metal Lamp Bases

THERE is a definite trend toward the use of infra-red drying lamps as a means of accentuating the drying of synthetic enamel coatings and the use of water-wash spray booths of the centrifugal type, particularly in the metal-coating industry.

In the coating of the new extra-long (108-in. size) fluorescent lamp bases, which are constructed of channel iron, this trend is most pronounced. The coating procedure, involving three fixed spray guns, is as follows:

The channels are thoroughly cleaned with solvent and placed on a conveyor which is constructed so that provision is made for a fixed gun to spray the primer from the underside at a definite point on the conveyor line as it enters the booth. Two additional guns are fixed at definite angles to coat the sides and top as the base passes.

These guns are placed inside a 3-ft. water-wash spray booth. The base then travels approximately 50-ft. and enters an infra-red drying tunnel, which contains four lamps —three on the top and one underneath.

After the prime-coated base returns to room temperature in traveling on the conveyor, it enters the white synthetic enamel applicators in which the spraying operation just referred to is duplicated—followed by baking. Again returning to room temperature, after coating, the lamp bases are passed on to the assembly department—and to final packaging and shipment.—M. C. ROBERTS.

DeVilbiss Opens New Sales and Service Branch in Chicago

A new sales and service branch, ultra modern in facilities, appointments and appearance, was opened recently in Chicago by the DeVilbiss Co., manufacturer of spray painting equipment, exhaust systems, air compressors and hose.

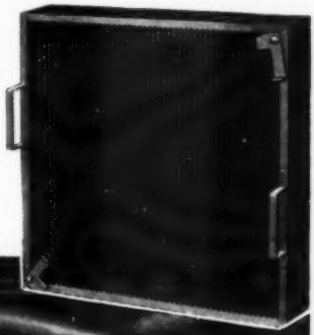
Located at 1280 W. Washington Boulevard, an address convenient to the Chicago business district, the branch is housed in a new building owned by DeVilbiss.

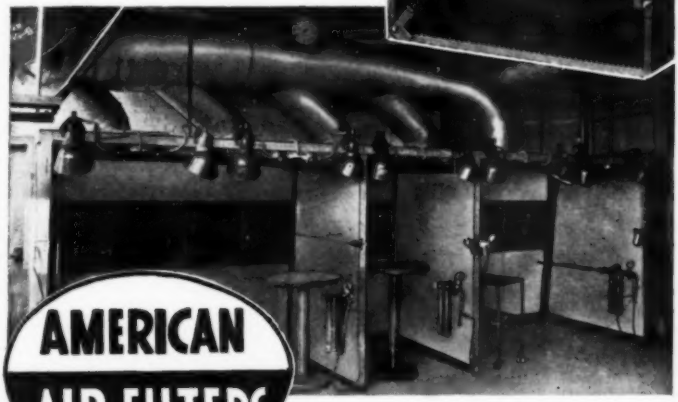
The building was designed and constructed to meet, adequately, the requirements of selling and servicing DeVilbiss equipment in the Chicago area. It features a spacious display room in which eye appeal plays no small part. This is of sufficient size to permit the display of the full line of industrial and service products made by the company.

In one large department there are installed ready for operation, a number of the company's standardized automatic spray coating and spray finishing machines. Here a manufacturer can test modern, high speed, automatic spray, coating as applied to his particular product and production conditions. Complete, modern facilities for the servicing of equipment, a feature provided by DeVilbiss in all of its branches, are also included in the new quarters.

AAF SPRAY BOOTH FILTERS

American Sinuous Filters offer worthwhile initial savings in addition to maintenance savings when used in spray booths to replace standard ventilating units equipped with special louvres. They eliminate serious maintenance problems by removing spray vapor before it reaches fan and ducts; prevent reduced fan efficiency due to accumulation on blades and reduce fire hazard. Write for Bulletin No. 224 giving complete installation data.





AMERICAN AIR FILTERS

AAF FILTERS FOR FINISH DRYING

The use of proper ventilation in the drying room, bringing filtered warm air into contact with the finished surfaces and exhausting the fume laden air accelerates drying and in turn reduces cost of this operation. The American Automatic Filter is recommended for larger drying room ventilation while in small drying rooms, Airmat Dry Filters are more practical. Write for Bulletins No. 230B and No. 240C.

American Automatic Self-cleaning Filter

Airmat Dry Filter

AMERICAN AIR FILTER CO.
Incorporated
711 CENTRAL AVENUE, LOUISVILLE, KY.

AIR FILTRATION AAF DUST CONTROL

NOW! ONE MAN DOES THE WORK OF THREE!

Don't let surface preparation be a bottle neck in your production. With the remarkable new air-driven Sterling SPEED-BLOC sander, one hand does the work of three in sanding, rubbing and polishing flat or curved surfaces, wet or dry—metal, wood or composition.

The Sterling slashes production time, cuts labor and abrasive costs, soon pays for itself. No wonder users report savings up to 75% besides getting rid of an old production headache.

WRITE FOR COMPLETE DETAILS

STERLING TOOL PRODUCTS CO.
359 EAST OHIO STREET CHICAGO, ILLINOIS

Sterling SPEED-BLOC SANDER

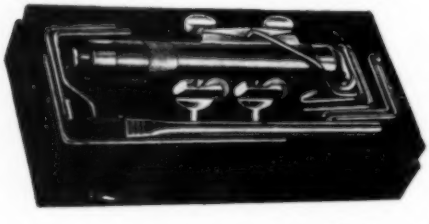
CUTS SANDING COSTS 25% TO 75%

For *REAL* Performance

BEUGLER STRIPERS

Add sales appeal to your product, speed up production and make a good paint job better with *accurate mechanical* striping. Over 50,000 users testify to Beugler Striper performance. Avoid imitations. Made in one standard quality. Kits are priced according to accessories in set.

BEUGLER MANUFACTURING CO.
4318 W. 2nd St., Dept. F Los Angeles, Calif.



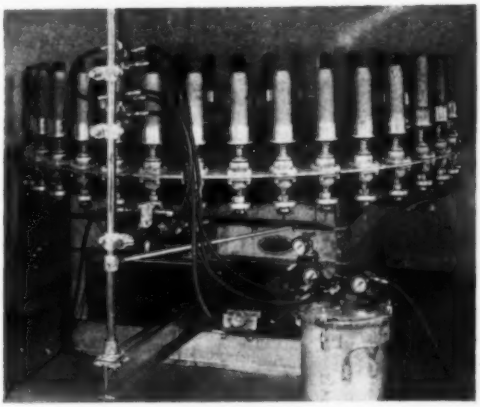
See your dealer or write us direct

KIT MODELS:

Challenger	$2.95
Craftsman	$4.95
De Luxe	$8.50

WHEEL SIZES:

No. 16 No. 25 No. 43 No. 57 No. 73 No. 93 No. 115



An automatic spraying machine designed for coating artillery shells at the rate of 500 per hour. Photograph, courtesy of the manufacturer, Eclipse Air Brush Co., Inc.

Wood Patching

THE practice, in most factories, is to allow too many large places that require patching to get into the finishing room. The attitude from the millroom on up is: "Let 'em patch it in the paint shop. They can get it through allright."

While it is true that any skilled finisher can fill a hole large enough to stick his thumb through—and make it look good—it must be borne in mind that patches like this slow down production and must be regarded as a future source of trouble. Nothing except wood, when placed in a cavity of considerable size, will fail to shrink a little and look bad a few months later.

We buy our putty in 2-lb. cans of different shades to match the wood on which it is used. This putty comes already mixed in a moist-solid form and contains sassafras oil to prevent it from drying out in the can. It is applied with a 1-in. putty knife. It sets so quickly that when filling small places such as nail holes, a man can work with the putty knife in his right hand and the sand block in his left. In two hours even a large patch is as hard as the surrounding wood. I believe this material is as near shrink-proof as any. — AL. MATLOCK.

S. C. Johnson & Son, Inc. to Put Up New Glo-Coat Building at Racine

Contract for the construction of new Glo-Coat building at Racine, Wisconsin, for S. C. Johnson & Son, Inc., makers of Johnson's Wax, Glo-Coat, paints, varnishes, industrial finishes, etc., has been awarded to Johnson & Henrickson of Racine from plans and specifications prepared by Lockwood Green Engineers, Inc., New York.

The building will be reinforced concrete, with exterior walls of brick and steel sash. It is to be irregular in shape, 104x165-ft., two stories and basement, with 5-story tower 60x81-ft.

Synthetic Organic Chemical Book

The 12th edition of "Synthetic Organic Chemicals", published by The Sharples Solvents Corp., 23rd and Westmoreland Sts., Philadelphia, Pa., contains 69 pages 5½ x 8½-in. punched and wire bound between attractive green covers. The book contains interesting reference information about products of the Sharples Solvents Corp.

SUNBRITE

GOLD

COPPER

SILVER

ALUMINUM

POWDER AND PASTE (Patent Applied For)

Write for Sample Today

The Mitchell-Mayer Co.
St. Louis, Mo.

Unmatched Speed
New Features
Lower Prices

New opportunities for shortcuts and savings in finishing operations are yours with one of the new AIRFLOS. Write today for illustrated catalog.

CROWN SPRAY GUN MFG. CO.
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TEN NEW **Airflo**
PORTABLE PAINTING OUTFITS

Warehouses in Principal Cities

My Friends

I'm an "up and at 'em"
Industrial Man.
I work like Hell and
My work I plan.

I ponder for months
The right approach—
To find the "in"
My Boss does coach.

In my two-buck room
I sit 'til two,
And figure and sweat
How to save for you.

I've studied your product
From "A" to "Z",
'Til it haunts my dreams,
and is part of me.

I know just how
It ought to look,
And the knowledge I have
Isn't found in a book.

My hopes rise high
On my call next day,
Because I'm sure
I've found the way.

So waiting for hours,
I sit and sigh
For you to say—
"I'll see that guy."

The moment finally
Comes at last,
And all my qualms
And fears are past.

I'm sure you'll smile
And grab my hand,
And say—"By heck!
Now ain't that grand!"

My pen's uncapped,
And I extend—
For you to sign
Where I intend.

But—woe is me!
There's something wrong,
'Cause you sit down;
'Tis—"Bill, so long."

My smile, I hope,
Disguises grief
At this, our meeting—
All too brief.

I'll try another plan
Next time,
To hold you 'til
I speak my line.

You see, I know
I've what you need,
But what I lack is,
Well—just speed!

—"Smiling Jim"

SEA-LAC

How Does Your Present Finish Compare with SEA-LAC?

SEA-LAC "80" Snow White Enamel, applied over a suitable primer and baked at 400° F. —withstands 500° F. for over 15 hours without loss of gloss or adhesion and stays white.

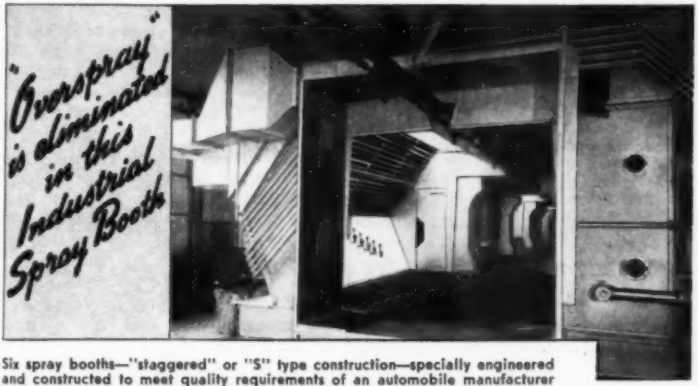
"77" type, with slightly lower heat resistance, meets average requirements, bakes at 350° F.

RATE your present finish against SEA-LAC for—

Film Continuity
Tensile Strength
Flexibility
Adhesion
Heat Resistance
Color Retention

WRITE FOR PRODUCTION SAMPLES AND INFORMATION

DURALAC CHEMICAL CORPORATION
NEWARK. N. J.



Six spray booths—"staggered" or "S" type construction—specially engineered and constructed to meet quality requirements of an automobile manufacturer —each supplied with perfect balance of washed, filtered, temperature-controlled air—can be operated at full efficiency with maximum or minimum production.

INDUSTRIAL SHEET METAL WORKS
Spray Booth, Oven, and Washer Manufacturers
624 EAST FOREST AVENUE DETROIT, MICH.

Send for our new Catalog that gives detailed information.

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metalworking, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

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EDITORIAL

Why "Big-Name" Goods Are Sometimes Favored

Some of us may regard with mixed emotions the fact that large manufacturers get such a tremendous volume of business in their respective fields. Of course, they have to get large volume to keep going. But aside from that we sometimes hear the cry: "Give the little fellow a chance."

Well, the little fellow has a chance and he gets a proportionate share of business *when and if what he has to offer is really satisfactory.* Here is a slant on the subject that is sometimes overlooked by some smaller manufacturers and those who champion their cause: *It is an imperative requirement that quality and dependability be outstanding in every part of a manufactured product — down to the smallest detail. This is what instills confidence in the minds of buyers and prospects.*

We have a letter from a man who works as finishing repairer and refinisher for a large concern that specializes in moving, packing, shipping and storing used goods. He is in a position to see all kinds of household goods after it has been in service. He sees where the cheap quality and weaknesses are and he finds out something about the respective merits of finishes on certain competitive products, some of which are made by nationally known concerns.

Referring to gas and electric ranges and electric refrigerators, which have a baked white enamel finish, he complains about chipped-off enamel around the bottom edges, and off-color characteristics of parts to be replaced. His letter ends with the significant statement that one brand of product with which he comes in contact has never shown evidence of chipped enamel or off-color tendencies.

The company he named is a very large one—internationally known. That company guards the reputation of its products by being extremely careful of every detail in the metal cleaning and finishing process. Some manufacturers are not quite so careful and, as a result, their products are not quite so dependable or uniform in quality —and not quite so much in demand.

Furniture Show Breaks Records; Business Excellent

* With all the fanfare of boom days, the winter national home furnishings show, held at the American Furniture Mart in Chicago from January 6 to 18, got off to a flying start, 6,200 buyers checking in the first two days and some 13,097 adding their names to the Mart's register during the 2-week fast-moving show.

Buyers jammed the corridors—shopping, checking, comparing and placing orders, *establishing the biggest market the industry has ever known; and manufacturers wrote orders to the tune of increases ranging from 15% to 300% over the year before.*

Reasons for this record market, which showed a 13.5% attendance increase over last year's record breaker were no mystery to most manufacturers who had anticipated a record show, but had under-estimated its extent. Most of them had forecast a 12,000 market, basing their forecasts upon conditions at the present time, and comparing their figures with the 11,056 total established in the winter of 1940.

Defense spending, increased employment, rising wages, extensive building and other factors contingent upon economic conditions have given impetus to the home furnishings industry for the past six months, and new gains have been recorded throughout the country. Good fall business followed by a record December, which, according to figures just released by the National Retail Furniture Association was 26% ahead of November, and 8% ahead of December '39, decreased inventories to the national low of 1%. Therefore, dealers needing merchandise and anticipating increased spring business found it necessary to attend the market to restock their inventories, inspect new lines and keep abreast of newest developments and selling ideas.

Prices trended upward with increases from 3 to 10% put into effect on the various lines. Dealers were not particularly disturbed by these increases, which were considered "moderate," and were more or less anticipated due to rising costs of raw materials, increased cost of labor, etc.

Deliveries were quoted at 60 days by most manufacturers, although some merchandise was available for immediate shipment. Other manufacturers promised deliveries at intervals ranging anywhere from 30 to 90 days.

Buying was substantial but conservative, retailers being careful not to underestimate nor over anticipate their requirements. All dealers, looking forward to a good spring, placed orders for merchandise which they felt would be in most demand, and carefully selected new items which were well designed and fairly priced.

Interest in merchandising suggestions, which were everywhere at the market, ran high, many dealers bringing their display and advertising managers as well as style coordinators and merchandise men to the market to help plan new methods of presenting the merchandise in the months ahead.

Throughout the market a note of optimism and confidence was sounded. Dealers were eager to

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* Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

get the business which they feel is available at this time. They turned a deaf ear to war talk, while lending a trained eye on defense preparations and the increased business this new activity has opened.—ROSALIE FLANK.

More Plastic Uses and More Plastic Finishes

★ A certain 1941 model refrigerator is designed to show something new inasfar as the inside of the door, or what is known as the door pan, is concerned. This door pan, to date, has been made of steel that is porcelained, as is the food compartment. The new model will show this part made of plastic, carrying an organic finish.

Wide comment has been made by paint manufacturers in what they have to offer toward finishing this plastic to give it the appearance of porcelain. A number of companies are offering a special finish for this plastic and, as time has not allowed a great amount of experimental tests, some of these materials are surprisingly interesting.

This change has a two-fold purpose: It eliminates the expensive breaker strip between the inside and outside metal contact. It has a better appearance than the porcelained steel combined with the black breaker strip.

This is only one of the many changes from steel to plastic and the addition of organic finish on plastic. Quite a number of similar changes in all types of fabrication are becoming more evident every day. A lot of pleasure may be experienced from working with plastics combined with organic finishes, because of the wide experimental field and scope of accomplished improvements.—C. O. JUDD.

Few Young Workmen Are Ambitious to Learn

★ In the past few years, even before the present defense program was inaugurated, there has been a marked shortage of young men who are willing to step into a finishing-room job and begin to learn the work in an intelligent business-like manner. True, there are millions of "unemployed" but out of a hundred applicants there are not more than half a dozen who would make good material for a responsible position in a production finishing room.

It seems that the ordinary run are mere job-holders, with little curiosity about any part of the work but their own.

By "intelligent" I do not mean that the apprentice should be a college graduate or even a high-school graduate. But he must have a desire and a capacity to learn, and a willingness to take on responsibilities.

The most valuable man in our shop had to quit school in the eighth grade and go to work, but he has not let his lack of schooling become a handicap. He will probably fare better in life than some of the better educated men. —AL. MATLOCK.

Hot Lacquer Comments

While some of us may not have heard much lately about "hot lacquer"—and while some of the reports that a few of us did hear may not have been particularly favorable — here is something a man in Los Angeles writes. (He wasn't asked to write on this partiuular subject, but was invited by the Editor to write something for the "Review of Equipment.")

"I think that the 'Hot Lacquer

Application' is going to go places in the near future. While the east has discouraged it to a certain extent, we have found it quite satisfactory in our territory, in its own field. One particular lacquer company has ironed out the bugs to the entire satisfaction of chair manufacturers and other allied lines. The major problem was 'drying time'. This same lacquer company expects to develop pigmented lacquers to a point where they can be used as well as clears—which is the big step.

"I understand that chemists in the large eastern lacquer plants have made exhaustive tests on this method of application and they are not entirely satisfied. Possibly the quality of finish on the West Coast is not on par with that in the east, or perhaps I should say the east is more demanding in its finish, while we are not so hard to please. I feel sure that competition, as keen as it is, will find a way to adapt 'hot lacquer' to the finishing industry."

The foregoing comments are those of Mr. Everett Damon, whose illustrated feature article about "Production Striping" was published in November 1940 issue of INDUSTRIAL FINISHING.

Letters from I. F. Readers

(Continued from page 8)

page 9 of the August 1940 issue, mentions that only a very few remain.

If you can spare an extra set of tear sheets, we would greatly appreciate it. Should the supply be exhausted, would you kindly advise us the issues in which the articles referred to above have appeared in order that we may have copies made?—4 C's. (Chemicals).

Color Machine

We would appreciate your sending us the name of some manufacturer who can furnish us with apparatus for blending and measuring lacquers and enamels, up to one gallon in quantity. —R. D., Habana, Cuba.

Drum Tilter

Please give us the name of the manufacturer or have the manufacturer quote us on the combination drum tilter and dolly, as shown on page 21 of December 1940 issue of INDUSTRIAL FINISHING.—E. Furn. Co.

White Air-Dry Wrinkle

We are in the market for some paint for our cabinets that will produce a wrinkle finish by air drying. Kindly advise us or forward this to the concern advertising in your magazine, stating price and full details on same. We use white mostly and any information you can give us will be appreciated.—V. P. Co. (Massage Tables, Reducing Rollers).

For Handling Drums

In the December, 1940, issue of the magazine INDUSTRIAL FINISHING, we notice your article on handling drums of finishing materials. You illustrate several devices for the simple handling of full drums. Would you please give us information as to where we can see these devices, and where they can be purchased?—N. L. Co. (Furniture Mfrs.).

Information given.—ED.

Roller Coating Machines

Will you please furnish us with a list of roller-coating machine manufacturers who produce equipment for applying paint to flat sheets? We are interested in 15-in. and 25-in. machines.—N. Mfg. Co. (Advertising Specialties).

Names and addresses given.—ED.

Pearl Lacquer

Will you kindly give me information where I may obtain a paint or lacquer that will give the effect of pearl, the same as is used on imitation pearl beads? This paint or lacquer is to be applied on opaque glass. I think this substance has a fish-scale base.—J. E. A.

Circulating Pumps

Would you please send me information on the fluid circulating pump or tell me where I can get pamphlets on it?—F. P. R.

We believe the large spray equipment companies can supply what you want.—ED.

The writer has just secured a copy of Industrial Finishing from a friend and is amazed at the abundance of information contained therein, sources of necessary materials, etc. Would like very much to receive it regularly.—C. C., Mgr. of Novelty Mfg. Co.

New Drying Lamp Booklet

How to apply radiant-heat lamps to industrial drying, baking, and heating tasks is revealed in a new 12-page illustrated booklet published by the Westinghouse Lamp Division, Bloomfield, N. J.

The fundamentals of radiant heat are presented in the first section of this publication, followed by four pages of photographs showing typical drying lamp installations.

Application data, with formulas for calculating the number of kilowatts required to produce the necessary amount of heat, and recommended spacing of the lamps are included. All types and sizes of Westinghouse drying lamps are listed and described. Copies of booklet A-3817 may be obtained free.

Molded Plastics Book Free

A new 32-page book entitled Bakelite Molding Plastics, has just been published by Bakelite Corp., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York, N. Y.

This illustrated booklet contains descriptions of compression and injection molding processes and explains the essential differences between thermosetting (hot-set) and thermoplastic (cold-set) molding materials.

The physical, mechanical and electrical properties and characteristics of Bakelite phenolics, ureas, polystyrenes and acetates are enumerated in editorial and table form so as to give the reader an understanding of how these materials can be employed. Four studies in full color emphasize the unlimited, pleasing color possibilities of molded plastics for modern color styling.

Copies are available to business executives upon request.

Exhibition of Modern Industrial Finishes by Maas & Waldstein Co.

Shells and bomb parts, finished in bright colors for identification and with glossless surfaces to render them inconspicuous at a distance, formed one feature of the exhibit of products finished with modern lacquers and enamels, which was held during the month of January at the offices of Maas & Waldstein Co., makers of industrial finishes, Newark, N. J.

Most of the products on display were those needed in the peaceful arts, and ranged all the way from map tacks to domestic furnaces.

Of special interest was a line of radio cabinets and other products which were made of Bakelite and finished in high-gloss baking enamel in cream, ivory and other colors. This method of finishing Bakelite permits standard black and dark brown bakelite plastic material to be colored in any desired manner.

Products with finishes baked by the new and rapid infra-red process were also shown. A line of ash trays, in many different colors, were baked for only three minutes in infra-red ovens, whereas an hour or more was formerly required.

Let your final finish be **FLOCK**

For softness, lustre and relief effects, flock will be found satisfactory in every respect. It's unique as a decorative finish, therefore commands attention. It gives a product unlimited sales possibilities. Let us tell you how to adapt FLOCK to your product. Our 4-Star line of rayon, cotton and cellophane flocks afford wide selection.

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